INDUSTRIAL DIAMOND ABSTRACTS

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DIAMOND MINING AND INDUSTRY

Obituary : Sir Ernest Oppenheimer
Anon. *Ind Diamond Rev* 1957 Vol 17 (205) p 225 (Dec)
X *C 1.4*

Automatic separation of diamond-bearing ores. Selbstaendiger Separator fuer diamantenhaltiges Gestein
Anon. *Gold & Silber* 1957 Vol 10 (11) p 22 (Nov) (In German)

The luminescence of diamond grains under x-rays has long been used for manual sorting. In the USSR an automatic method has now been developed in which the ore is carried on a moving belt past a window, through which x-rays are allowed to fall on it. The luminescence of the diamond-bearing ore falls on a photomultiplier which, after suitable amplification, activates a relay directing the luminescent grains into a separate channel from the rest of the charge.
H *C 1.3*

The selection of diamonds for industrial purposes
G. P. Freeman. *Ind Diamond Rev* 1957 Vol 17 (203) pp 187-188, 190, 198 (Oct)

Abridgement of paper to Stichting 'Amsterdam Diamantstad', June, 1957.

In the classification of industrial diamonds, four points are chiefly considered: crystal habit, transparency, structural perfection, and origin or texture. The qualities required by stones used for different applications are outlined and graphs are given showing proportional distribution of output, comparative prices for stones used for different purposes, and price of truing stones in relation to weight. 4 illustr.
Y *C 1.61*

National economic importance of the diamond industry in the Yakut ASSR
K. Kondakov, G. Maumov. *Vop Ekon* 1957 (6) pp 135-140 (June); *Library of Congress Mthly List Russ Access* 1957 Vol 10 (7) p 1989 (Oct) (In Russian)
X *C 1.24 : C 1.5*

The outskirts become the centre [Siberian diamond fields]
B. Babliuk. *Znamia* 1957 Vol 27 (7) pp 118-132 (July); *Library of Congress Mthly List Russ Access* 1957 Vol 10 (7) p 1989 (Oct) (In Russian)
X *C 1.0 : C 1.24*

The 'Invincible' [diamond] at the service of men
G. Blok. *Znan Sila* 1957 Vol 32 (4) pp 15-16 (Apr); *Library of Congress Mthly List Russ Access* 1957 Vol 10 (7) p 1851 (Oct) (In Russian)
X *C 1.0*

Diamonds of Yakutia
A. Burov. *Oktiabr'* 1957 Vol 34 (7) pp 172-175 (July); *Library of Congress Mthly List Russ Access* 1957 Vol 10 (8) p 2306 (Nov) (In Russian)
X *C 1.24*

Seventy seven years on
S. Dessau. *Ind Diamond Rev* 1957 Vol 17 (204) p 217 (Nov)

The front-page of a pamphlet advertising diamond tools, which was issued in the year 1880, is reproduced with some comments. 2 illustr.
Y *C 1.1 : C 1.6*

In the land of diamonds
I. Dolgushin. *Znan Sila* 1957 Vol 32 (4) pp 11-14 (Apr); *Library of Congress Mthly List Russ Access* 1957 Vol 10 (7) p 1989 (Oct) (In Russian)
X *C 1.24*

Introducing hard-alloy diamond substitutes
A. L. Tamarkin. *Mashinostroitel'* 1957 (7) pp 28-29 (July); *Library of Congress Mthly List Russ Access* 1957 Vol 10 (8) p 2181 (Nov) (In Russian)
X *C 1.5 : D 14.1*

A diamond-bearing provice in Siberia
V. S. Trofimov. *Priroda* 1957 Vol 46 (7) pp 10-18 (July); *Library of Congress Mthly List Russ Access* 1957 Vol 10 (8) p 2306 (Nov) (In Russian)
X *C 1.24*

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Electrostatic separation of minerals

M. B. Donald (Dept Chem Engg, University Coll, London). *Research* 1958 Vol 11 (1) pp 19-25 (Jan)

Following a general outline of the history and development of electrostatic separation work at the Ramsay Memorial Laboratory of Chemical Engineering, the mechanism of charging dry particles is described. 14 illustr, 23 ref, 2 tables.

Y *C 1.31*

Diamonds of Yakutia

K. P. Kosmachev. *Geog v Shkole* 1957 Vol 20 (4) pp 61-63 (July-Aug); *Library of Congress Mthly List Russ Access* 1957 Vol 10 (7) p 1989 (Oct) (In Russian)

X *C 1.24*

Industrial diamonds from Panna, India

S. M. Mathur. *Ind Diamond Rev* 1957 Vol 17 (205) pp 227-228, 238 (Dec)

A brief illustrated account is given of operations in the Panna diamond field of Madhya Pradesh, India. There is no diamond tool industry in India at present; but it is proposed to establish a factory for the manufacture of diamond drilling bits. 4 illustr.

Y *C 1.24 : C 1.5*

PHYSICAL, CHEMICAL & MECHANICAL PROPERTIES OF DIAMOND AND OTHER HARD MATERIALS

Why synthetic corundum boules split

C. Barta (Prague Techn Univ of Chem). *Gemmologist* 1957 Vol 26 (317) pp 219-224 (Dec)

The tendency of synthetic corundum boules to split can be controlled both during and after production. A differential cooling process for different vertical crystal layers is considered. Longitudinal splitting of boules by the vector characteristic of heat expansion is confirmed. The significance of the angle between the crystallographic *c*-axis and the growth direction, *ie* the orientation angle, is discussed, and also the dependence of splitting on the two axes. The least tendency causing irregular fracture occurs at an inclination of up to 70 deg. 6 illustr, 24 ref.

R *C 2.22*

The production and properties of synthetic corundum

C. Barta. *Pokroky Praskove Metallurgie, Nakladatelstvi Ceskoslovenske Akadamie Ved* 1954 pp 611-630; *Ind Diamond Rev* 1957 Vol 17 (201) pp 147-150, 152 (Aug)

Following an outline of synthetic production and a description of the Verneuil process, the method of crystallization of synthetic corundum and the shape and characteristics of crystals produced are discussed. Methods of influencing powder quality during production are described. 7 illustr, 26 ref.

Y *C 2.2 : C 2.61*

Man-made diamonds ready for market

K. R. Beardslee (Gen Electr Co). *Carbide Engg* 1957 Vol 9 (11) pp 5-9 (Nov)

General Electric synthetic diamonds are available in sizes from 60 down to 600 mesh. They are said to have been tested in the lapping of hardened tool steel, finishing of diamond dies and dental tools and in resinoid and vitrified bonded grinding wheels, and have given results comparable with natural diamond powder. Their use in metal-bonded wheels has yet to be investigated. 5 illustr.

Y *C 2.2 : C 2.6*

Radiation-induced hardness changes in graphite

K. E. Horton, R. L. Carter. *Nuclear Sci & Engg* 1957 Vol 2 pp 513-515 (July); *Battelle Techn Rev—Abstr* 1957 Vol 6 (11) p 728a (Nov) No 15673

Changes in Knoop hardness of artificial graphite from the range 9 to 12 to the range 30 to 75 are found to accompany fast neutron irradiation at 30 C.

X *C 2.23 : C 4.0*

The atomic structure of carbon

A. Kwiecinski. *Przeglad Gorn* 1956 (4) pp 153-161; *Polish Techn Abstr* 1957 (3) p 15 (Original in Polish)

If the model of the carbon atom devised by the present author is substituted for van ten Hoff's model, the structure of graphite and of carbon crystallites can be simply explained by covalent bonding.

Y *C 2.51*

Lubrication and wear

D. Tabor. *Nature* (London) 1957 Vol 180 (4600) pp 1448-1451 (Dec 28)

The proceedings of the Conference on Lubrication and Wear, October 1-3, 1957, in London, are summarized .

Y *C 2.23 : D 14.2*

Conical spiral structure and laminar cleavage of graphite

T. Tsuzuku. *Phys Soc Japan Journ* 1957 Vol 12 pp 778-788 (July); *Battelle Techn Rev—Abstr* 1957 Vol 6 (11) p 729a (Nov) No 15676 (Original in English)

An apparently circular crystal is really a stack of conical graphite sheets, each of which is successively rotated about the common axis in *c*-direction. Such a conical crystal can be formed by a spiral mechanism. The gliding mechanism connected with the spiral structure is explained in terms of dislocations.

X *C 2.51*

Reflecting curved-crystal x-ray spectrograph

A. C. Walters. *Econ Geol* 1957 Vol 52 (6) pp 694-701 (Nov)

A curved-crystal spectrometer of the type described by Birks and Brooke (*Anal Chem* Vol 25 pp 692-697) has been modified by the addition of automatic traversing gear and a recorder so that selected areas of polished mineral sections may be analysed without damage. The method is also applicable to the analysis of very small powder samples without causing loss. 6 illustr, 5 ref.

G *C 2.2 : D 15.2*

Gemstones coloured by heat and atomic rays

R. Webster. *Goldsmiths Journ* 1958 Vol 64 (467) pp 25, 28 (Jan)

(Concl). Proton or deuteron bombarded diamonds turn permanently green or brown; if neutrons are used more intense coloration results. Electron bombardment gives an aquamarine-blue colour, but results are less predictable than with other particles. Means of detecting artificially coloured stones are discussed. 2 illustr.

F *C 2.27*

Regalox alumina ceramics

Worcester Royal Porcelain Co Ltd, Gilfach Tonyrefail, Glam. *Machinery* (London) 1957 Vol 91 (2354) pp 1490-1491 (Dec 27)

Regalox high alumina ceramic is described and its physical characteristics are tabulated. 2 illustr, 1 table.

Y *C 2.2 : C 6.2*

Graphitization of carbon-containing substances

A. M. Zubko, E. Z. Spector. *Doklady Akad Nauk* 1957 Vol 114 p 1239; *Insdoc List* 1957 Vol 4 (23) col 1571 (Dec) (Original in Russian)

X *C 2.3*

Artificial diamonds

A. Lavrenenkova. *Znan Sila* 1957 Vol 32 (4) pp 17-19 (Apr); *Library of Congress Mthly List Russ Access* 1957 Vol 10 (7) p 1851 (Oct) (In Russian)

X *C 2.6*

Observations on diamond inclusions. Beobachtungen an Diamanteinschluessen

Y. Maertenson. *Dtsch Goldschmiede Ztg* 1957 Vol 55 (12) pp 633-634 (Dec) (In German)

Some illustrations of inclusions in diamonds are given. 6 illustr. *H* *C 2.3*

Electrical, optical and elastic properties of diamond-type crystals. II

V. S. Mashkevich. *Zhur Eksp i Teor Fiz* 1957 Vol 32 (4) pp 866-873 (Apr); *Library of Congress Mthly List Russ Access* 1957 Vol 10 (7) p 1850 (Oct) (In Russian)

X *C 2.2*

Graphite whiskers

L. Meyer. *Zeits Kristallog* 1957 Vol 109 pp 61-67 (July); *Battelle Techn Rev—Abstr* 1957 Vol 6 (11) p 729a (Nov) No 15686 (Original in English)

An especially well developed whisker of 1.3 mm length and 1.1 mm diameter was studied. It shows fibre structure, the graphite planes being parallel to the whisker axis. All evidence suggests that the whisker grew from its base by diffusion of carbon along the high energy boundary between the whisker and the matrix. *X* *C 2.51*

Strength of sintered corundum

N. M. Pavlushkin. *Steklo i Keram* 1957 Vol 14 (7) pp 14-17 (July); *Battelle Techn Rev—Abstr* 1957 Vol 6 (11) p 729a (Nov) No 15682 (Original in Russian)

Experiments determining compressive and bend strength of specimens with regular polished and pickled surfaces. The compressive and bend strength of treated corundum is considerably higher than that of corundum with an untreated surface.

X *C 2.22*

Coefficients of flat-surface friction

A. O .Schmidt, E. J. Weiter. *Mech Engg* 1957 Vol 79 (12) pp 1130-1136 (Dec)

An apparatus is described by which the frictional characteristics of many combinations of surfaces were studied. Results were obtained for the effect of initial wear and time at rest on the coefficient of static friction. 'Break-away' and kinetic friction are studied by means of time-displacement graphs. 16 illustr, 20 ref, 2 tables, bibl. *F* *C 2.23*

DIAMOND AND OTHER HARD MATERIALS IN INSTRUMENTS, ETC

Metal engraving on the halftone Klischograph

H. Taudt. *Klischograph* (English edn). 1956 Vol 1 (3-4) pp 11-15 (Nov)

Klischograph engraving is suitable for Nolar foil, zinc, magnesium, aluminium and copper. The styli recommended are special steel for coarse screen zinc and coarse and fine screen magnesium and aluminium, and hard metal for fine screen zinc and fine screen copper. Technical advice is given on various points in engraving. 2 illustr, 3 tables.

X *C 10.21*

Metallographic preparation of precious metals by slicing with the microtome. Metallographische Praeparation von Edelmetall-Proben durch Ueberschneiden mit einem Mikrotom

P. Grodzinski. *Zeits Metallkde* 1957 Vol 48 (11) pp 610-611 (Nov) (In German)

The author refers to a previous publication by G. Reinacher (see *Bibl Ind Diamond Appl* 1957 Vol 14 p B8) and stresses the advantages of slicing with diamond knives. 1 illustr, 7 ref. *H* *C 3.26*

HARDNESS AND WEAR TESTING

The relation between the aim and the method of microhardness testing. Die Beziehungen zwischen der Zielsetzung und dem Messverfahren der Mikrohaerteprufung

H. Bueckle. *VDI Ber* 1957 Vol 11 pp 9-27 (In German)

Although the indenters used for microhardness testing give geometrically similar impressions, microhardness —as distinct from macrohardness—depends on the load. Various methods for extrapolation have been proposed but none is satisfactory either theoretically or experimentally. Errors are principally of two kinds: (*i*) errors of technique, such as imperfect polish, vibrations, errors in reading, variations in speed of loading, imperfections of the indenter, and (*ii*) errors due to the sample itself. Both kinds increase rapidly with diminishing size of indentation below 30-15 microns. Since the volume affected by indentation is much greater than the size of the indentation actually visible, the effect of any inhomogeneities in the sample will increase sharply with the size of the indentation. In fact, the indentation diameter becomes load dependent when it is of the same order of magnitude as the grain size diameter.

Microhardness, low-load hardness and macrohardness are defined as ranging from loads of 1,200 g, 200-3,000 g, and greater than 3 kg, respectively. Microhardness can be related to macrohardness by (*a*) extrapolation (various formulae are given and discussed, (*b*) direct calibration, and (*c*) calculating the error associated with every indentation. The distribution of microhardness is often a sensitive measure of other physical properties and in this case errors in actual measurement are unimportant. Microhardness is also suitable for testing surface layers. Some special methods of evaluating results are described, as is the importance of distinguishing not only between micro- and low-load hardness, but also between the instruments used for each. A scheme for the instruments, loads and methods of evaluation to be used is given.

H *C 4.32*

The microscope as used for workshop measurements. Das Mikroskop in der Werkstatt-Messtechnik

A. Metz. *ATM* 1957 (262) pp R129-R133 (Nov) (In German)

The article includes a note on the use of the microscope in hardness testing. 16 illustr, 1 ref.

H *C 4.0*

Machines and instruments for material testing. Maschinen und Geraete der Werkstoffpruefung

H. Philipp. *Werkstatt & Betrieb* 1957 Vol 90 (12) pp 913-917 (Dec) (In German)

Various machines, including hardness testers, exhibited at the 5th European Machine Tool Exhibition at Hanover, are described. 10 illustr.

H *C 4.0*

True and apparent sources of error in microhardness testing : their classification and effect on the results. Echte und scheinbare Fehlerquellen bei Mikrohaertepruefung : ihre Klassifizierung und ihre Auswirkung aus die Messwerte

H. Bueckle. *VDI Ber* 1957 Vol 11 pp 29-43 (In German)

The variation of indentation diameter with load in microhardness testing is often represented on a double log diagram. This facilitates extrapolation but obscures any errors. The basic shapes of the $H=F(P)$ curves are described, and the errors due to (*i*) shape of indenter, (*ii*) measurement of load, (*iii*) lateral displacement of indenter, (*iv*) variations in the speed of indentation, (*v*) vibrations, (*vi*) errors in timing the duration of contact, (*vii*) faulty mounting of the sample, and (*viii*) inclination and curvature of the sample, are discussed in detail. Special attention is paid to the careful preparation of the specimen. Errors in the measurement of the impressions are examined under two headings : (*a*) errors due to the optical apparatus, and (*b*) errors due to the shape of the indentations. The effects of elastic recovery and the structure of the sample are also considered. Detailed replies to the ensuing discussion are appended.

H *C 4.32*

Micro-hardness testing

T. E. W. Preston. *Metalworking Prodn* 1957 Vol 101 (41) pp 1833-1836 (Oct 11)

The GKN microhardness tester is a bench instrument which may be fitted to a standard metallurgical microscope. The hardness test is made by pressing a square pyramid indenter of 136 deg included angle into the specimen, with a load usually under 100 g, but which may be increased to 200 g for accurate tests on very hard materials. *H* *C 4.32*

Microhardness. Ueber Mikrohaerte

A. Smekal. *Phys Verh* 1956 Vol 7 (2) p 23 ; *Osram Techn-Wiss Ber* 1957 Vol 30 (5/6) p 134 (June 15) (In German)

Lecture to meeting on physics of solids, Leoben, Mar 1956.

The resistance to indentation of microscopic regions depends on their homogeneity. In homogeneous regions the hardness is determined by the flow resistance, whereas in heterogeneous regions the plasticity of dislocation, fracture and twinning all play their part and the hardness is not uniform. Different designations are suggested for the two cases.

H *C 4.32*

Measuring the abrasiveness of carbonaceous deposits

Anon. *Sci Lubr* 1957 Vol 9 pp 16-17 (July) ; *Battelle Techn Rev—Abstr* 1957 Vol 6 (11) p 764a (Nov) No 16411

Weight loss of a test piece subjected to an oil suspension of carbonaceous deposits is used as an index of wear or abrasiveness. *X* *C 4.0*

Instrument for making micro-hardness measurements at elevated temperatures

Comstock & Westcott Inc. *Ind Diamond Rev* 1957 Vol 17 (202) pp 177-178 (Sep)

The load-applying part of the tester is a specially designed and built Tukon microhardness tester with Knoop indenter, the load being between 10 and 100 g. The instrument was built for the purpose of measuring the hot hardness of protective coatings on steel, and especially the cross-sections of such coatings, which might be only 0.0005 in. wide. With care it was possible to make indentations to within 0.0002 in. of the desired spot at a temperature of 1,250° F (675° C). 2 illustr. *Y* *C 4.32*

Hardness testing. Haertepruefung

Anon. *Draht* 1957 Vol 8 (12) pp 544-545 (Dec) (In German)

Hardness testers exhibited at the 5th European Machine Tool Exhibition at Hanover are briefly surveyed. 2 illustr. *H* *C 4.0*

Test bars for the control of Rockwell machines

P. Breskin, A. Sokirko. *Zavodsk Lab* 1957 Vol 23 (6) p 765 (June) ; *Library of Congress Mthly List Russ Access* 1957 Vol 10 (8) p 2255 (Nov) (In Russian)

X *C 4.0*

Hardness testing unit solves difficult inspection problem

Edo Corp, College Point, NY. *Macihne & Tool Blue Book* 1957 Vol 52 (12) pp 269-270 (Dec)

Advantages are claimed for the Wilson universal Rockwell hardness tester in hardness measurements of areas difficult of access. 1 illustr.

Y *C 4.0*

Determining errors in the configuration of durometer tips

A. Yu. Gidel. *Izm Tekh* 1957 (3) pp 33-38 (May-June) ; *Library of Congress Mthly List Russ Access* 1957 Vol 10 (8) p 2182 (Nov) (In Russian)

X *C 4.0*

Stresses alter hardness

S. K. Setty, J. T. Lapsley, E. G. Thomsen. *Mech Engg* 1957 Vol 79 (12) pp 1127-1129 (Dec)

Experimental results and the relation of hardness and stress are given. It was found that under tensile stress hardness decreases linearly in the elastic region ; under compression hardness increases, while under tension it decreases and by more than corresponding compression would produce. Compressive loading increases hardness and residual forces maintain this effect. 7 illustr, 5 ref. *F* *C 4.0*

Measures of hardness

S. A. Smolich. *Izm Tekh* 1957 (3) pp 86-88 (May-June) ; *Library of Congress Mthly List Russ Access* 1957 Vol 10 (8) p 2182 (Nov) (In Russian)

X *C 4.0*

USP 2,790,321 (Dec 29, 1953) **F. C. Huyser, American Machine & Metals Inc**

Portable hardness tester

Fig 1 shows a clamp with jaws *10* and *11* holding specimen *14*. A U-shaped unit *20* is mounted on jaw *10*, its base portion *21* carrying the indenter *19* and two horizontal bars *22* and *23*. The unit is pivoted on jaw *10* in *24*. By turning knob *28*, indenter *19* is lowered onto the specimen and then pressed into the surface of the specimen while the left arm of bar *22* rises against feeler *31* of dial indicator *33*, indicating the distortion, *ie* the load applied. At the same time, pin *42* and indicator *19* touch the surface of specimen *14* and show through leverage *38*, *39*, the depth of penetration on dial *36*. The measuring elements are isolated from stress and temperature effects on at least one of the clamping jaws. (3 claims, 4 illustr). Ref : 3 USP ; 2 GP. See GP 618,608. *J* *C 4.01*

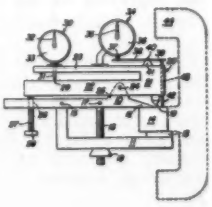

Fig 1. Portable hardness tester. USP 2,790,321.

TRUING OF GRINDING WHEELS

Form dresser

Glover Mfg Co, 422 Park Ave, Meadville, Pa. *Grinding & Finishing* 1957 Vol 3 (5) p 86 (Sep)

The Clearview Radi-Angle form truer provides improved visibility by means of a hole bored through the spindle and a powerful specially-ground fixed focus lens. With the removable diamond slide located at the front of the swing arm, radii may be set with gauge blocks but without touching the diamond on the blocks or removing the tool from the grinder. With vernier angle markings and movable angle stops, angles may be set and trued accurately without a sine bar. 1 illustr.
R *C 5.0*

Hand-applied dressers

R. S. McConnell (Desmond-Stephan Mfg Co). *Grinding & Finishing* 1957 Vol 3 (5) pp 52, 54, 58 (Sep)

Truing is defined as restoring the shape of the wheel face, dressing as the removal of embedded metal particles from the wheel surface as well as the surface layer of dulled abrasive. Dressing produces an open, fast cutting wheel, but precision grinding requires additional truing with a diamond. Accurate hand dressing requires a proper tool rest. Tips are given on the technique of hand dressing. Proper cutter care is essential, *eg* pins and bushings should be oiled at frequent intervals. Star shaped cutters are recommended for average dressing, corrugated cutters without teeth for smooth wheel finish, and a tube type dresser for narrow faced and odd shaped wheels. Where tool rests are not available, hand-held dressers should be presented to the wheel at 15 to 30 deg angles. 8 illustr.
R *C 5.0*

Grinding outboard motor crankshafts

H. G. Mogensen jun. *Grits & Grinds* 1957 Vol 48 (7) pp 9-13 (July)

The main bearing surfaces and taper portion of a single-throw crankshaft are ground in one operation on a straight infeed heavy duty machine. Angular wheel slide grinders are used to grind the thrust shoulders, if necessary. On crankshafts with multiple throws the side walls of the centre bearing may be used as thrust surfaces and the spacing between them must be held to close tolerances. Straight infeed machines are used with a deep shoulder wheel feed arrangement for plunge grinding as well as truing the grinding wheel to thrust bearing width. Both wheel sides are trued simultaneously with a fork type truing device with individual micrometer adjustment for the diamonds. A CM-1 multi-wheel grinder is used for longer crankshafts requiring multiple grinding operations. The crankpins are ground in Norton Crank-o-Matic grinders, the crankshaft throw being established by special bearing blocks. The 3 main bearings of a two-throw two-pin crankshaft are ground in a single plunge grind with a 3-wheel mount. 7 illustr.
R *C 5.0 : C 12.6*

Hartex centreless grinding machine

Rockwell Machine Tool Co Ltd, Welsh Harp, Edgware Rd, London NW 2. *Metalworking Prodn* 1957 Vol 101 (50) p 2249 (Dec 13)

A hydraulic device ensures accurate truing of the grinding wheel. The control wheel is normally controlled by hand, but can also have a hydraulic truing attachment. Stopping, starting, and direction of truing motions are controlled by a hand lever and a valve knob regulates the truing traverse speed. The truing devices can be swivelled to permit rapid correction. 1 illustr.
Y *C 5.0*

Self-holding diamond dresser

Anon. *Machine Shop Mag* 1958 Vol 19 (1) p 42 (Jan)

A means of fixing the diamond truer holder when dealing with large workpieces is discussed. Two 'pot' magnets, exerting axial magnetic force, are inserted and secured by single counter-sunk head screws. The magnets will adhere strongly to any iron or steel work surface and the use of two magnets avoids the danger of the diamond holder block swivelling. 1 illustr.
F *C 5.0*

Truing a curling stone

Anon. *Ind Diamond Rev* 1957 Vol 17 (202) pp 171-172 (Sep)

An account is given of the methods of manufacturing curling stones out of granite blocks. A diamond truing tool is used to mark off two lines, 2 in. apart around, that area of the circumference which is subsequently chipped into a striking band. 3 illustr.
Y *C 5.0 : C 8.0*

Minganti RIM 9 internal grinding machine for diesel injector nozzles

Cyril Adams & Co (Special Projects) Ltd, 70-74 City Road, London EC 1. *Machinery* (London) 1958 Vol 92 (2355) p 26 (Jan 3)

This machine, designed for grinding the cylindrical and conical seating portions of diesel engine injector nozzles, has provision for truing both wheels and for their adjustment relative to the workhead axis to compensate for the material removed. 1 illustr.
Y *C 5.0 : C 12.6*

How to reduce diamond wear

L. H. Cook (Cook Res Lab, Menlo Park, Calif). *Tool Eng* 1957 Vol 39 (6) p 108 (Dec)

The importance of orientation in a diamond truer, for giving maximum resistance to abrasion, is discussed. Present practice is to use the crystal with the line joining the poles of the crystal perpendicular to the grinding surface. Experimental results suggest that an angle of 45° between this line and the grinding surface, *ie* grinding taking place along a rib of an octahedron, will give greater wear, if coupled with use of the dodecahedron plane. 1 illustr.
F *C 5.0*

What is the smallest radius that can be trued with a wheel truer ?

H. F. Swenson. *Grinding & Finishing* 1955 Vol 1 (2) pp 32-35 (June); *Ind Diamond Rev* 1957 Vol 17 (203) pp 192-193 (Oct)

There are three main points: (*i*) when truing a small concave radius the limitation lies in the diamond point, (*ii*) for a small convex radius the grinding wheel is the limiting factor, and (*iii*) rigidity of the truer must be positive and chatter-free and the infeed not above 0.0002 in. in a sweep. Various types of truers are described and illustrated. 5 illustr.
Y *C 5.0*

A new two-stone truing tool

C. J. Michel. *Ind Diamond Rev* 1957 Vol 17 (204) pp 214-215 (Nov)

See *Bibl Ind Diamond Appl* 1956 Vol 13 p B314 (Dec).
X *C 5.0*

Shaped tools for form grinding from the manufacturers' viewpoint

J. B. Spiers. ASTE Tool Engg Conference Paper No 24T16, 1956, 7 pp; *Ind Diamond Rev* 1957 Vol 17 (202) pp 167-168, 170, 179 (Sep)

10 illustr. See *Bibl Ind Diamond Appl* 1956 Vol 13 p 232.
X *C 5.0*

Quantity production of blades for gas turbine compressors

E. H. Jones. *Machinery* (London) 1957 Vol 91 (2354) pp 1492-1496 (Dec 27)

Stainless steel compressor blades are ground with vitrified bond aluminium oxide wheels which are automatically trued after grinding three parts by two cam-type diamond truers. To change from one root to another it is only neecssary to fit new truer cams and grinding wheels of suitable width. 9 illustr.

Y *C 5.0*

USP 2,788,624 (July 29, 1955) **W. J. Newell, Harris-Seybold Co**

Wheel dresser

The truing device for the wheel of a circular tool grinder (workpiece mounted between centres) is arranged on a slide which is given a slight swinging movement about a pivot point which travels lengthwise as the template produces the swinging movement. The diamond tool is fixed on a projection of the slide which travels on a track bar mounted between the centres and is interchangeable with the work when truing. The slide pivots on two ball bearing rollers which form a movable pivot and is controlled by two other ball bearing rollers, one of which runs on the profile of a template block while the other runs on a leaf spring. (9 claims, 5 illustr). Ref : 6 USP.

J *C 5.01*

USP 2,792,672 (Sep 7, 1954) **L. O. Carlsen, W. C. Critchley, H. Pedersen, Gleason Works**

Grinding machine and wheel dresser thereof

The gear grinding machine operates with a pair of conical grinding wheels, the sides of the teeth being ground by plane, or nearly plane, surfaces of the wheels. Each wheel has its own truing unit with a feed motion effected simultaneously with, and proportional to, the wheel feed, so that the position of forming faces of the wheel remains the same after truing in relation to the work as before. Each truing unit has a single diamond tool for truing both the tip and the side face and also the round edge where the two faces blend. The tool is rotatable on a bracket slidable in a housing which in turn is pivotally mounted on its support. A single hydraulic actuator effects the three movements, *ie* it swings the tool across the tip of the wheel by pivoting the housing by a cam, moves the tool over the tool over the round edge by rotating the tool arm on the bracket, and moves the tool across the bracket in the housing. (22 claims, 24 illustr). Ref : 9 USP.

J *C 5.01*

USP 2,792,823 (July 14, 1954) **W. Muench, Walter Muench Inc**

Sine-bar arrangement and fixture for cutting a radial clearance form on grinding wheel peripheries

A sine bar arrangement, as shown in USP 2,642,059, provides on the swing block a swingably mounted and calibrated diamond-carrying saddle but with limited angular adjustment of the saddle. Relatively wide angle adjustment is made possible by having a U-shaped base member with a base portion and a pair of upstanding support arms, and a U-shaped swing block with a base portion and a pair of upstanding mounting arms. The spacing of these provides a central space for accommodating part of a grinding wheel, diamond carrier and tool, carrier support, sine bar disks in position for engagement with gauge blocks determining the angle, and means for securing the unit in the adjusted position. (11 claims, 9 illustr). Ref : 8 USP. See USP 2,642,059. *J* *C 5.01*

USP 2,792,824 **A. Rickenmann, Reishauer-Werkzeuge AG**

(Aug 20, 1954) (Conv date, Aug 31, 1953, Switzerland)

Device for dressing of grinding worms

The main object is to produce straight lines on the flanks of the grinding worms for grinding involute teeth on the workpiece, or to produce lines deviating from the straight lines for grinding profiles which deviate as a whole or in part from the involute. The device should also permit the production of different profiles or parts of profiles (symmetrically or asymmetrically) on the two surfaces of one tooth to be ground by the worm. The truing device is fixed on a first slide mounted on a second radial slide. The movement of the device is divided into four phases of an automatically controlled cycle, *ie* ' working stroke ', radial withdrawal of the radial slide, return stroke (at high speed), and advance of radial slide to working position. Both flanks of a tooth of a worm are trued simultaneously by a diamond tool so that the actual device has two diamond holders moved by two mechanisms in mirror arrangement with templates corresponding to the individual path of each diamond. The diamonds used have a short cutting edge which is slightly convex. This prevents under-cutting of the profile line. (8 claims, 13 illustr). Ref : 6 USP.

J *C 5.01*

FINE BORING AND FINE TURNING OF METALS

Improved ceramic tool

Anon. *Carbide Engg* 1957 Vol 9 (12) p 15 (Dec)

A new aluminium oxide composition, VR-97, reduced turning time, gave good surface finish, small tolerance for taper, and successful interrupted cutting. Work involving considerable shock on the tool bit is still not practicable with ceramic tooling, but for machining graphite and other abrasive materials it is claimed to be very suitable. *F* *C 6.23*

The SEM commutator lathe

Anon. *Ind Diamond Rev* 1957 Vol 17 (205) pp 236-237 (Dec)

A floor-to-floor time as low as 5 seconds for unskilled labour is claimed for this commutator lathe, which is said to provide a limit of 0.001 in. on diameter and 0.0001 in. on concentricity with estimated surface finish of 5 to 10 micro-in., when using a diamond tool. There is an additional attachment which will perform a shouldering operation or other radial facing operation at the same time, the two cuts being made together without increasing floor-to-floor time. 1 illustr.

Y *C 6.21*

Metal cutting research by the Production Engineering Research Association

Anon. *Ind Diamond Rev* 1957 Vol 17 (203) pp 194-195, 197 (Oct)

The importance of machining research is stressed and some account is given of work done by PERA. This has included research into the flank wear of single point carbide tools. 3 illustr, 1 table.

Y *C 6.0*

Circular form tools with carbide inserts

H. J. Bissonette. *Machine & Tool Blue Book* 1957 Vol 52 (12) pp 155-156 (Dec)

A new method of setting carbide inserts in tool blanks is described and illustrated. It is claimed that less damage results. 4 illustr. *Y* *C 6.22*

High speed boring deep holes

H. J. Bruck (LeBlond Machine Tool Co, Cincinnati, Ohio). *Carbide Engg* 1957 Vol 9 (12) pp 16, 18, 19 (Dec)

The LeBlond rapid borer, by a combination of cutter and machine, claims to speed up boring. Cutters suitable for solid boring, trepanning and counter-boring are described. The importance of an adequately filtered cutting fluid to give better finish, increase tool life and reduce wear on the fluid pump is stressed. With a 40% higher speed, these machines are claimed to give high production rates with accuracy and eliminate secondary finishing. 5 illustr.

F *C 6.0*

Cooling of cutting tools with sprayed liquid under pressure

S. S. Chetverikov & coll. *Vestnik Mash* 1957 Vol 37 (12) p 71 (In Russian)

X *C 6.2*

Measuring cutting forces

P. Chiesorin (Inst Gen Tech, Genoa Univ, Italy). *Tool Eng* 1957 Vol 39 (6) pp 114-120 (Dec)

A dynamometer for measuring the components of the cutting force is described. The cutting forces in relation to cutting speed for various depths of cut, feeds and top rake angles are shown graphically and indicate a maximum value, between 100 and 200 ft/min. 8 illustr.

F *C 6.0*

Abstracts of papers presented at Cincinnati TAS Technical Activities Seminar

H. Ernst & coll. *Mod Machine Shop* 1957 Vol 30 (6) pp 142, 144, 146, 148, 150, 152 ,154, 156 (Nov)

Abstracts are given of the papers presented at this seminar including: 'The spiral point drill—a new development in drilling', by H. Ernst and W. A. Haggerty; 'Machining the unmachinable', by E. Merchant; 'Elements of electro-discharge machining', by R. O. Williams; 'Ceramic tools today', by E. J. Krabacher; 'Ceramic tools tomorrow', by E. S. Fitzsimmons; 'Cutting fluids—research, development and practical application', by G. Vosmer and E. J. Ritter; 'Factors affecting the wear of grinding wheels', by E. J. Krabacher, and 'Physical and chemical nature of abrasive wear', by G. J. Goepfert.

Y *C 6.0 : C 12.6*

Condition of surface layer of metal machined by V. A. Kolesov's cutting tools

D. A. Komarov. *Trudy LIEI* 1956 (13) pp 51-68; *Library of Congress Mthly List Russ Access* 1957 Vol 10 (8) p 2279 (Nov) (In Russian)

X *C 6.0*

Insert toolholders feature one-piece carbide-coated chipbreaker clamp

Gen Electr Co, Metall Prod Dept. *Carbide Engg* 1957 Vol 9 (12) p 30 (Dec)

A Lift-O Matic Carboloy toolholder includes a clamp screw accessible from top or bottom, a carbide surface chipbreaker, a heat-treated shank and a solid carbide insert seat. Moving the clamp up and down on the clamp screw is said to eliminate sticking in the shank. 1 illustr.

F *C 6.2*

Double-end boring bar encased with hard tungsten carbide

Kennametal Inc, Latrobe, Pa. *Carbide Engg* 1957 Vol 9 (11) p 37 (Nov)

The casing is intended to reduce chatter and so reduce the cost of precision boring. A range of sizes is available. 1 illustr.

Y *C 6.0*

Chipforming machine tools. Spanabhebende Werkzeugmaschinen

G. Lichtenauer. *Industrieblatt* 1957 Vol 57 (11) pp 507-530 (Nov 25) (In German)

Many machine tools exhibited at the European Machine Tool Exhibition in Hanover are described, including grinding, lapping and drilling machines. 100 illustr.

C 6.0 : C 12.6 : C 13.0

Results of machining research on titanium alloys

K. Loo (North Am Aviation Inc). *Machinery* (London) 1957 Vol 91 (2352) pp 1382-1386 (Dec 13)

Questions as to the advantages of carbide and HSS cutters for machining titanium alloys are considered in detail. 7 illustr.

Y *C 6.22*

Why not braze carbide tools with gas ?

C. A. McFadden. *Carbide Engg* 1957 Vol 9 (12) pp 12, 14 (Dec)

A method of retipping carbide cutting tools by semi-automatic gas-fired brazing machines is given. The method is claimed to limit oxidation and prevent scale formation. 5 illustr.

F *C 6.22*

Production research in metal cutting

M. E. Merchant (Cincinnati Milling Machine Co). *Mech Engg* 1957 Vol 79 (12) 1137-1141 (Dec)

The importance and methods of research in the machining of metals is discussed. The various fields of study and the advantages of combined efforts are considered and examples given suggest the most important lines of development. 7 illustr, 5 ref, 2 tables.

F *C 6.0*

A lubricant with a particularly fine structure. Schmierpulver mit besonders feinem Gefuegeaufbau

Molykote KG Krauss, Weiss & Co. *Feinwerktechnik* 1957 Vol 61 (11) pp 405-406 (Nov) (In German)

Molykote Microfine, the molybdenum disulphide lubricant developed by the Alpha Corporation, Stamford, Conn, has an average particle size of 1 micron and can thus penetrate even the smallest surface cracks. It has proved very successful in tube drawing and particularly in increasing tool life in turning.

H *C 6.0*

An all-new metallic high velocity cutting material

W. E. Newcomer (Newcomer Products Inc). *Carbide Engg* 1957 Vol 9 (11) pp 21, 23 (Nov)

NewMet (NM-95), consisting of 64% titanium carbide, 34% molybdenum carbide and 2% nickel, is said to combine a hardness of 95 Rockwell A with a transverse rupture strength of 150,000 lb/sq in., this latter providing the ability to feed through normal chip loadings at high velocity. The material is available in insert form, but is not recommended for brazed tool tips. 1 illustr.

Y *C 6.22*

On the cutting mechanism for soft metals

K. Okushima, K. Hitomi. *Kyoto Univ, Mem Fac Engg* 1957 Vol 19 pp 135-166 (Apr); *Battelle Techn Rev—Abstr* 1957 Vol 6 (11) p 777a (Nov) No 16653 (Original in English)

By orthogonal dry cutting of soft metals, such as lead and Lipowitz alloy, at low speed with a specially designed cutting test equipment, the existence of the transitional region between the rigid region of the workpiece and the plastic region of the steady chip was recognized. This should be taken into consideration in the theoretical analysis of cutting mechanism instead of the single shear plane.

X *C 6.0*

A high precision lathe headstock

L. M. Leblans. *Philips Techn Rev* 1957/58 Vol 19 (2) pp 68-69 (Aug 24); *Ind Diamond Rev* 1957 Vol 17 (204) pp 218-219 (Nov)

See *Bibl Ind Diamond Appl* 1957 Vol 14 p B185 (Oct).

Y *C 6.21*

Standardization of cutting tools

I. P. Levitskii. *Mashinostroitel'* 1957 (6) pp 5-8 (June); *Library of Congress Mthly List of Russ Access* 1957 Vol 10 (7) p 1848 (Oct) (In Russian)

X *C 6.2*

Helical multi-edged tools of hard metal (sintered carbide)

N. A. Rozno. *Stanki i Instr* 1957 Vol 28 (11) p 29-32 (In Russian)

8 illustr, 3 tables. *Y* *C 6.22*

Quality of surfaces subjected to fine turning

A. A. Sukhoparov. *Trudy LIEI* 1956 (13) pp 34-50; *Library of Congress Mthly List Russ Access* 1957 Vol 10 (8) p 2279 (Nov) (In Russian)

X *C 6.0 : D 15.4*

The chattering lathe tool. II

S. A. Tobias. *Metalworking Prodn* 1957 Vol 101 (50) pp 2229-2234 (Dec 13)

The results of the mathematical theory are set out in the form of stability charts. Chatter arising during the first revolution of the workpiece and that arising during subsequent revolutions are discussed, as are effects of work velocity, material, tool geometry, shank, etc. 4 illustr, 8 ref. *Y* *C 6.0*

Diamond milling of germanium, silicon and quartz

US Burke Machine Tool Div, Cincinnati, Ohio. *Ind Diamond Rev* 1957 Vol 17 (204) pp 207-208 (Nov)

Two types of general purpose machine tools have been modified for machining germanium, silicon and quartz for use in transistors: milling machines and surface grinders. The advantages of the former type are outlined and operations on the No 1 US Burke milling machine are described. 2 illustr.

Y *C 6.21*

CUTTING AND MACHINING OF GLASS

The glass scratch effect and molecular structure

J. Bourdillon (New York State Dept of Health). *Nature* (London) 1957 Vol 180 (4600) p 1475 (Dec 28)

The relation between the effect of scratching the wall of a glass container with the tip of a glass rod and the nature of the liquid present is examined. Three types of effect were observed and are discussed. 10 ref.

Y *C 7.0*

The art and science of glass cutting

H. Jebsen-Marwedel. *Algemeine Glaserztg* 1956 (18); *Ind Diamond Rev* 1957 Vol 17 (204) pp 209-210, 212-213 (Nov)

The differing views of the theoretical scientist and practical workman are considered and it is pointed out that in many cases discrepancies between them are more apparent than real. An example is given of the traditional rule that a cut in glass must be broken immediately while still 'hot'. Research has shown that this is of real value owing to the fact that stresses produced in the glass subside with time. 6 illustr, 3 ref.

Y *C 7.21*

The variation of the speed of fracture propagation with chemical composition in glasses. Ueber die Abhaengigkeit der Bruchgeschwind'gkeit von der chemischen Zusammensetzung bei Glaesern

H. Schardin, W. Struth. *Phys Verh* 1956 Vol 7 (3) p 56; *Osram Techn-Wiss Ber* 1957 Vol 30 (5/6) p 189 (June 15) (In German)

Paper to Phys Tagung, Freiburg, Apr 1956.

According to the preliminary results of recent measurements, there appears to be a linear relation between the maximum speed of fracture propagation and composition. *H* *C 7.0*

Dutch decoration of English glass

R. J. Charleston (Victoria & Albert Museum, London). *Soc Glass Technol Journ* 1957 Vol 41 (200) pp 229T-243T (June)

A brief historical review of the influence of Dutch diamond point and wheel engraving on English glassware. An account of the centres of production and the styles adopted at various times is given. 18 illustr.

F *C 7.21 : C 10.21*

Investigation of fracture by means of high frequency vibrations

F. Kerkhof, H. Dreizler. *Glastechn Ber* 1956 Vol 29 (12) pp 459-470; abstr *Soc Glass Technol Journ* 1957 (808) (Oct)

Specially prepared samples were broken under tension, the fractures being started by a scratch placed on the side of the sample. It was found that the depth of the scratch, and therefore the breaking load, affect the fracture velocity. *Y* *C 7.21*

Glass cutting. Das Glasschneiden

H. Fitz. *Buchneuerschein volksdem Laendern* 1957 (18) p 6 (Dec 10) (Original in Russian)

Book, Rezani skla. SNTL, 120 pp (to appear in 1958).

The various processes, methods and tools are described as well as mechanization and automation. [Not in library of Ind Diamond Inf Bur].

H *C 7.21*

MACHINING OF STONE, ETC

Diamond grinding at Lodge Plugs

Anon. *Ind Diamond Rev* 1957 Vol 17 (205) pp 229-230, 232 (Dec)

An account is given of the diamond grinding department of this company. The normal tolerances achieved by grinding Sintox before firing are ±2% and these are satisfactory for many applications. Where higher tolerances are required, grinding must take p'ace after firing and diamond machining is essential. 5 illustr.

Y *C 8.72*

Mechanized production of instrument jewels

R. Humphrey, R. E. Leeds. *Engineering* 1957 Vol 183 (14746) pp 236-238 (Feb 22); *Ind Diamond Rev* 1957 Vol 17 (201) pp 152-158 (Aug)

11 illustr, 2 ref. See *Bibl Ind Diamond Appl* 1957 Vol 14 p 101 (June). *X* *D 10.0*

Grinding and lapping mineral-ceramic tool bits

V. S. Mamaev. *Mashinostroitel'* 1957 (7) pp 25-28 (July); *Library of Congress Mthly List Russ Access* 1957 Vol 10 (8) p 2181 (Nov) (In Russian)

X *C 8.72 : C 12.21*

USP 2,784,536 (Oct 3, 1955) **L. H. Barron**

Diamond band saw

No-one has previously produced a diamond band saw with diamond grit coated on the cutting edges which does not bind in the kerf, with subsequent heating and rapid destruction of the diamond cutting face. In known saws, only the forward edges have been coated, the sides of the band being left plain. The welded joint has also been a continuous source of trouble. In the new saw, diamond grits are distributed along and around a flat steel strip (0.02 in. thick, ¼ in. wide) and embedded in an electroplated coating (nickel). The ends of the strip are left bare, resistance-welded together, and the rough joint covered with brazing metal compound (copper alloy) to approximately the same thickness as the diamond-coated main part, *ie* 0.06 in. (8 claims, 4 illustr). Ref : 2 USP.

J *C 8.01 : D 8.01*

USP 2,796,706 (Aug 27, 1956) **C. W. Anderson, Norton Wheel Co**

Diamond cut-off wheel

A wheel to be used for cutting concrete is made of abrasive sections which are composed of two sectors, an abrasive sector, containing diamond grit, and a supporting sector between the diamond abrasive sector and the steel centre of the wheel, containing a tungsten carbide cobalt mixture. Both sectors are pressed in ring moulds : first the carbide annulus, then the diamond-containing abrasive portion in a groove of the annulus thus obtained, so as to form an integral body, which is sintered in a graphite mould. The carbide portion and the centre have a lesser width than the diamond portion. The sectors are welded to the steel centre by a process described in USP 2,488,151. (1 claim, 9 illustr). *J* *C 8.01 : D 8.01*

ROCK DRILLING

Keys to successful competitive drilling. VIA

R. A. Bobo, G. S. Boudreaux. *World Oil* 1957 Vol 145 (7) pp 125, 129-130, 132 (Dec)

Aerated muds, or air or gas, are used to give reduced hydrostatic pressure in drilling. Soft rocks show increase in penetration rate with reduced pressure. Hard rocks need higher bit loading before reduced pressure is effective. Bit footage and penetration rates are improved, with air drilling showing the same advantage over aerated muds as the latter over clear water. Aeration drilling presents no problem in low volume or weeping water zones. Safe rates of mud flow to secure the highest air-mud ratio possible, equipment, and the occurrence and control of corrosion are discussed. 6 illustr. *F* *C 9.0*

The first television probe of bore holes. Die erste Fernseh-Bohrlochsonde

H. Boehm. *Bohrtechnik & Brunnenbau* 1957 Vol 8 (11) pp 366-368 (Nov) (In German)

The probe, connected to 300 m of television cable, is lowered into the bore hole. The walls of the hole can be viewed through a Plexiglas window by means of a short-focus wide-angle objective and a revolving mirror. The instrument can also be used for measurements of the width of fissures, etc. 4 illustr.

H *C 9.0*

LITERATURE REQUESTS

Please quote the page number of the Bibliography containing the original reference, and the author and title of the article, in all cases.

Experiences and problems of core drilling for iron ore in the Lahn region. Erfahrungen und Probleme bei Kernbohrungen auf Eisenerz im Lahnrevier

A. Esch. *Erdoel-Zeits* 1957 Vol 73 (11) pp 303-310 (Nov) (In German)

Geological conditions and general drilling equipment are described. Great importance is attached to the development of the most suitable types of diamond boring crowns. The setting material and the size of diamond must be adjusted to the particular type of rock. Diamonds of 1/30 ct with rounded edges are much more economical even though the drilling advance is reduced. With African diamonds it has gradually become possible to reduce the consumption from 120 to 50 ct per cubic metre of drill hole. By improving the matrix material the average life of the crown has been increased from 25 to 40 m of bore hole. The crowns should be taken out of operation before diamond loss has reached 30%. It is found that diamond consumption is much smaller in crowns studded with new diamonds than with used ones.

Recently, crowns with diamond-impregnated rims have been introduced. Best results have so far been obtained with crowns in which the sinter metal bond is harder at the side and edge than on the top of the crown. These crowns use very much smaller diamonds and are found to be particularly suitable for very hard rocks. By interspersing a few coarser grains, good advances can be achieved. When such crowns have been withdrawn from use, the remaining diamonds can be reclaimed. Particularly hard and brittle rocks can be drilled successfully with crowns in which very small diamond splinters are sintered into a carbide matrix.

The types of flushing and rods are described and output and costs are considered. 8 illustr.

H *C 9.21*

Slim hole drilling for the exploration of the geological conditions and underground sealing in the construction of dams. Kleinlochbohrungen zur Klaerung der geologischen Verhaeltnisse und fuer die Untergrunddichtung im Talsperrenbau

K. H. Heitfeld. *Erdoel-Zeits* 1957 Vol 73 (11) pp 311-319 (Nov) (In German)

Exploratory drilling with diamond crowns has three main advantages : (*i*) greater core recovery, particularly in conjunction with a double coring tube, (*ii*) production of a smooth wall of the borehole, and (*iii*) smaller pressures resulting in only slight deviation of the borehole. The good cores obtainable with diamond crowns has led to the use of small (86 mm) diameter holes, corresponding to 72 mm core diameter. The type of machine and flushing used are briefly discussed. The necessary geological observations are described. The relative advantages and disadvantages of (*a*) percussion drilling, (*b*) rotary drilling with carbide crowns, and (*c*) rotary drilling with diamond crowns are tabulated. 3 illustr, 5 tables. *H* *C 9.21*

Deep drilling problems discussed in Oeynhausen. In Oeynhausen wurden Tiefbohrprobleme diskutiert

A. M. Stahmer. *Erdoel-Zeits* 1957 Vol 73 (11) pp 322-323 (Nov) (In German)

At the meeting of the Association for deep drilling technology, the drilling of 4,000 m holes has been described, and details of the equipment, drilling bits, flushing, costs, etc, are given in a series of lectures.

H *C 9.0*

Diamond drilling through steel rails

Anon. *Ind Diamond Rev* 1957 Vol 17 (203) p 191 (Oct)

Photographs are shown of diamond cores taken through steel-reinforced concrete. 2 illustr.

Y *C 9.21*

The theoretical approach to turbodrilling. II

W. Tiraspolsky. *World Oil* 1957 Vol 145 (7) pp 140, 144, 146, 151 (Dec)

Various factors affecting turbo-drilling are discussed. A graph is given for the relation between speed and power showing the impossibility of obtaining high performance in hard formation or of applying a heavy bit load in soft formation. The factors affecting the performance are discussed and the analysis necessary for obtaining the graphical elucidation of the operational characteristics of the bit is outlined. Future development is thought to concern the combination of surface and sub-surface engines for more economical footage. 6 illustr. *F* *C 9.0*

Choosing the right diamond for drilling

Anon. *Engg & Mining Journ* 1957 Vol 158 (6) pp 89-91 (June); *Ind Diamond Rev* 1957 Vol 17 (203) p 196 (Oct)

2 tables. See *Bibl Ind Diamond Appl* 1957 Vol 14 p 169 (Sep). *Y* *C 1.61 : C 9.21*

The relation between grain size distribution in the boring and drilling processes during percussion rock drilling. Untersuchungen ueber den Zusammenhang zwischen der Korngroessenverteilung im Bohrklein und dem Bohrvorgang beim schlagenden Gesteinsbohren

M. Clement. *Zeits Erzbergb Metallhuettenw* 1957 Vol 10 (6) pp 255-264; *Glueckauf* 1957 Vol 93 (29/30) p 936 (July 20) (In German)

H *C 9.22*

Down-the-hole attachment for blast holer

Gardner-Denver Co. *Engg & Min Journ* 1957 Vol 158 (12) p 36 (Dec)

The Mole-Dril, having a tungsten carbide bit attached to the drill with a short shank, is said to cut even the hardest formation or broken ground with unusual speed. It is designed to fit a rotary air-flush blast hole drill in the 4¾ to 6½ in. diameter sizes and operates best on 100 lb/sq in. air. Depth is limited only by the air capacity needed to clean the hole. 1 illustr.

Y *C 9.22*

The inspection of diamond-studded drilling crowns and reamers when drilling by the Craelius method. Zur Ueberwachung der Bohrkronen und Raeumer mit Diamantbesatz beim Diamantbohren nach Craelius

M. Kloess. *Zeits Erzbergb Metallhuettenw* 1957 Vol 10 (9) pp 457-461 (Sep) (In German)

A distinction is drawn between crowns with whole diamonds set in the surface and those which are impregnated with diamond splinters. The former give a more rapid advance but suffer a greater loss in weight per metre drilled. Each tool should be inspected regularly and a complete record of its performance and wear kept on specially designed index cards. 11 illustr, 2 tables. *H* *C 9.21*

Core drilling below ground in the Monopol mine. Kernbohrungen unter Tage auf der Zeche Monopol

W. Korfmann. *Glueckauf* 1957 Vol 93 (43/44) pp 1337-1344 (Oct 26) (In German)

A new area of the Monopol mine was explored by upwards drilling with a rotary drilling machine using double core rods and diamond crowns. The method, which proved highly successful, and the equipment are fully described. *H* *C 9.21*

New apparatus for directional well drilling

Yu. S. Vasil'ev, G. A. Shetler. *Neft Khoz* 1957 Vol 35 (7) pp 1-4 (July); *Library of Congress Mthly List Russ Access* 1957 Vol 10 (8) p 2229 (Nov) (In Russian)

X *C 9.0*

New air and gas drilling concepts

P. L. McLaughlin. *World Petroleum* 1957 Vol 28 pp 46-49 (Aug); *Battelle Techn Rev—Abstr* 1957 Vol 6 (11) p 759a (Nov) No 16316

A report on new technological advances to encourage air drilling operations. *X* *C 9.0*

USP 2,789,790 (June 13, 1956) J. H. Kirby II

Core drilling apparatus

When core drilling with diamond bits which are easily damaged by pieces of steel or other junk in the hole, previous cleaning of the hole is desirable. It is proposed that a permanent magnet should be incorporated in the core barrel. There is a certain difficulty in preventing short circuiting of the magnet as the insertion of non-magnetic material increases the air gap or reduces the size of the magnet. This difficulty is overcome by the use of a plug with a central core of magnetic material and an outer housing, also of magnetic material, connected together by a head of magnetic material. The magnetic flux travels axially through the housing parallel to the axis and across the head. There is no need for an insulating shell as the only air gap and the poles are at the end of the plug. (9 claims, 6 illustr). Ref: 5 USP.

J *C 9.01*

WIRE DRAWING

Wire drawing machines, attachments and tools. Drahtziehmaschinen, Zubehoereinrichtungen und Werkzeuge

Anon. *Draht* 1957 Vol 8 (12) pp 505-510 (Dec) (In German)

A review of machines exhibited at the 5th European Machine Tool Exhibition at Hanover includes a description of a twin-head polishing machine for diamond dies between 0.025 and 2.00 mm in. diameter, exhibited by the Belgian Tool Co, Malines, Belgium. Machines for fashioning and finishing diamond dies were shown by Karl Scholz, Berlin. 15 illustr.

H *C 11.0 : D 11.0*

Electric method of drilling holes in diamonds in manufacturing dies

A. M. Rura. *Vest Elektroprom* 1956 Vol 27 (7) pp 25-32 (July); *Library of Congress Mthly List Russ Access* 1957 Vol 10 (8) p 2150 (Nov) (In Russian)

X *D 11.4*

Laws governing the drawing of metals in the presence of lubricants

S. J. Veiler, V. I. Lichtman. *Doklady Akad Nauk* 1957 Vol 114 p 1224; *Insdoc List* 1957 Vol 4 (23) col 1589 (Dec) (Original in Russian)

X *C 11.0*

Methods of producing wire drawing dies

I. I. Voronov. *Metallurg* 1956 (6) p 36; DSIR CTS Transl No 400 1957 (Dec) (Original in Russian)

A method of producing drawplates and dies is described and faults encountered are discussed. The replacement of soldering by the use of a hydraulic press, removal of warping or skew, the grinding of the die and the polishing are claimed to give an improved product. Boron carbide abrasive is used for polishing the internal surface to mirror brightness.

F *D 11.0*

The development of wire drawing. Die Entwicklung des Drahtziehens

D. R. Even. *Draht-Welt* 1957 Vol 43 (16) pp 219-223; *Stahl & Eisen* 1957 Vol 77 (24) p 1768 (Nov 28) (In German)

H *C 11.1*

Industrial diamonds in the wire mill

L. A. Zucker. *Wire & Wire Prod* 1956 Vol 31 (12) pp 1443-1445, 1498-1506 (Dec); *Ind Diamond Rev* 1957 Vol 17 (202) pp 173-175, 179 (Sep)

A general survey is made of the use of diamonds in the wire industry with particular reference to the use of diamond powder for polishing carbide dies. The standpoint is chiefly an economical one, but such questions as the hardness of individual diamonds and the quality of diamond powder are also considered. It is pointed out that in recent years there has been a greater tendency to use diamond dies for certain ranges of wire, which had previously been drawn through carbide dies exclusively. In conclusion, difficulties in standardization are discussed.

Y *C 11.0 : D 11.0*

The effect of the shape of the die hole on the stresses produced in wire drawing. Der Einfluss der Ziehholform auf den Spannungszustand im Ziehgut beim Drahtziehen

O. Pawelski. *Stahl & Eisen* 1957 Vol 77 (25) pp 1835-1836 (Dec 12) (In German)

3 illustr, 2 ref. *H* *C 11.0*

Lubrication in wire-drawing. II

J. G. Wistreich (BISRA). *Wire Ind* 1957 Vol 24 (287) pp 1027-1029, 1046 (Nov)

This part deals with methods of applying the lubricant properties of soap, and 'wet' drawing where lubrication is deliberately restricted to the boundary regime in the interests of high surface finish, and is supplemented by ample cooling. 5 illustr, 16 ref.

Y *C 11.4*

Practical slide rule method for calculating percentage reduction in area in working and testing of rod and wire

F. A. Mohrnheim (Rhode Island Univ, Kingston, RI). *Wire & Wire Prod* 1957 Vol 32 (12) pp 1495-1497, 1522-1524 (Dec)

A simple slide rule method is described for determining percentage reduction in area during drawing. The method can be used for rapid determination of the minimum number of passes, sequence of die sizes and similar problems. 2 ref. *Y* *C 11.0*

USP 2,790,273 (May 27, 1955) **G. P. Hafer, Western Electric Co Inc**

Apparatus for lapping dies

A plurality of lapping units and die holders are individually driven from a main drive shaft. The lapping spindles are raised at predetermined intervals to free the abrasive to flow in each die towards its reservoir. The amplitude of the rocking motion can be individually adjusted for each die holder so that apertures of different contours may be lapped simultaneously. (2 claims, 7 illustr). Ref: 4 USP.

J *C 13.01 : D 11.01*

DIAMOND TECHNOLOGY

First published 1942 as "Production Methods for Diamond and Gemstone". The second edition of this book by P. Grodzinski has been revised throughout and considerably enlarged. 840 pages, 486 illustrations, 94 tables, and indexes. From NAG Press Ltd, 226 Latymer Court, London W 6. 54s 6d, post free.

GRINDING AND POLISHING OF HARD METALS

The DP-method of polishing. Die DP-Poliermethode

Anon. *Metalloberflaeche* 1957 Vol 11 (10) pp 338-339 (Oct) (In German)

H. Struers, Chemiske Laboratorium, Copenhagen, have produced a new metallographic polishing machine in which, after rough polishing with emery or coarse diamond paste, a high finish is obtained by the use of fine diamond paste on a specially closely woven cloth. The pastes are carefully graded, soluble in water, perfectly homogeneous and contain no ineffective particles. Any section can be polished within 2-4 minutes and photographs of the various stages of polishing are shown. The cutting (as distinct from tearing) action of the sharp diamond particles ensures that cracks, fissures and sharp edges are shown up perfectly clearly. 10 illustr.

H *C 12.61*

Carbide tools of special form for interrupted cutting

M. G. Jensen (Pratt & Whitney Co). *Machinery* (London) 1958 Vol 92 (2355) pp 17-18 (Jan 3)

The problem of applying carbide to interrupted internal cutting was solved by combining in one tool the advantages of both positive and negative rakes. A tool was ground with 5° positive rake and 0.09 in. nose radius and 15° end cutting edge angle. A 30° negative rake chamfer, 0.03 in. wide, was then ground on the side cutting edge around the nose radius and along the end cutting edge. Since the 30° negative rake increased the included angle of the cutting edge, it was felt that the clearance angle should be increased to 10°, leaving a cutting edge with an included angle of 110°. All operations were performed without coolant to avoid the harmful effect of intermittent heating and cooling on the carbide. 2 illustr.

Y *C 6.22 : C 12.21*

Titanium grinding

L. C. Hays (Thompson Products Inc). *Grinding & Finishing* 1957 Vol 3 (5) pp 39-44 (Sep)

Belt polishing, form grinding and internal grinding operations are discussed. The internal grinding of ¼ in. holes to a total tolerance of 0.0003 in. for a hole length of 1¼ in. in RC 130B titanium is described. In production the pieces were being diamond ground and time was being lost in dressing the wheels. A graph illustrates the results of tests with two aluminium oxide wheels at various ratios of work ID divided by wheel OD; the wheels were diamond trued and operated with a nitrite-type water solution. Hole tolerance was held to 0.0001 in. taper with no bell-mouthing. No difficulty was experienced in removing a deliberately induced taper in the work ID, leaving a surface finish of 8 micro-in. 6 illustr.

R/W *C 5.0 : C 12.6*

Saves 90% in diamond wheel costs

Cooperative Carbide Grinding Co Inc. *Grinding & Finishing* 1957 Vol 3 (5) pp 67-68 (Sep)

An electrolytic grinding attachment is used on a No 3 surface grinder for the rough or preliminary grinding of carbide tool inserts, with an 80 or 90% reduction in diamond wheel consumption. The grind is completed in one pass, with a fraction of the wheel-to-work resistance of ordinary grinding operations; 144 carbide inserts are mounted on the chuck for simultaneous grinding. 2 illustr.

R *C 12.21 : C 12.9*

How Chrysler-Kokomo programs carbide insert tooling

J. B. Pond. *Carbide Engg* 1957 Vol 9 (12) pp 7-11 (Dec)

Circular multiple fixture is used with Heald rotary grinding machines, adjustable for insert type and dovetail form tools. Various lengths and shapes can be dealth with simultaneously. Diamond wheels (100 concentration) are used for sharpening brazed tip carbide tools, using 120 mesh for 8 micro-in. and 220-500 mesh for 5 micro-in. finishes. 8 illustr.

F *C 12.21*

Mass production grinders with interchangeable units. Rettificatrici da grande produzione ad elementi combinati

M. Valli. *Macchine* 1957 Vol 12 (10) pp 945-955 (Oct) (In Italian)

For mass production grinding, the users have been for some time expressing a preference for very specialized machines to do any particular job on one particular workpiece, or at least on a well-defined category of workpieces. The makers of grinding equipment, up against the ever-varying demands of their customers, have organized themselves so as to be able to design and supply those special machines as quickly as possible.

This has given rise to the standard unit, that is, independent assemblies can be put together in the numbers and layout required. The complete machines will be made up of several of those units, with special groups designed as required for the particular workpiece.

Among these units are: workpiece-carrying dead centres, grinding wheel mounts, axial locaters for the workpiece, table stands, diamond truing heads, automation controls, etc. The article discusses work carried out in this field by an Italian firm, Olivetti of Ivrea. 44 illustr. *G* *C 5.0 : C 12.6*

Economic grinding of shaping tools in briquette factories. Wirtschaftliches Schleifen der Formzeuge in den Brikettfabriken

Anon. *Bergbautechnik* 1957 Vol 1 (10) pp 539-541 (Oct) (In German)

2 illustr, 4 tables. *H* *C 12.21*

German Industrial Fair, 1957. Grinding, Polishing. Deutsche Industriemesse Hannover 1957. Schleifen, Polieren

Anon. *Metalloberflaeche* 1957 Vol 11 (8) pp 265-269 (Aug) (In German)

Since many manufacturers kept their new developments for the European Machine Tool Exhibition few new machines were shown. Some are briefly described, including some diamond grinding tools of Ernst Winter & Sohn, Hamburg. Some optical instruments for the measurement of surface roughness are also described. 10 illustr. *H* *C 1.6 : C 12.2*

Greater economy in grinding—even on old machines. Rationeller schleifen—auch auf aelteren Maschinen

Anon. *Technica* 1957 Vol 6 (26) p 1490 (Dec 20) (In German)

A method of accurately grinding the conical ends of small spindles is described. *H* *C 12.6*

Centrelesss grinding for screw blanks

Anon. *Edgar Allen News* 1957 Vol 36 (422) pp 180-181 (July)

Automatic centreless grinding as applied to the production of countersunk screw blanks is described. The machine is fully automatic, and works at the rate of 600 pieces per hour. By the use of appropriately formed wheels, both shank and countersink are ground simultaneously. 4 illustr. *G* *C 12.6*

Re-grinding the Abul milling cutter

Anon. *Ind Diamond Rev* 1957 Vol 17 (202) pp 176-177 (Sep)

This milling cutter allows some or all of the blades to be changed while the cutter body remains on the machine. A simple fixture is described and illustrated for regrinding the blades free-hand on a diamond wheel. This is said to reduce grinding costs by 75% and permit the replacement of damaged blades in approximately 2 minutes. 2 illustr.

Y *C 12.21*

The care and maintenance of tools. The grinding of twist drills. Pflege und Instandhaltung der Werkzeuge. Schleifen von Spiralbohrern

Anon. *Technik und Betrieb* 1957 Vol 9 (12) (insert page) (Dec) (In German)

2 illustr. *H* *C 12.21*

Another step towards automation in the metallurgical laboratory

Buehler Ltd, 2120 Greenwood St, Evanston, Ill. *AB Metal Digest* 1957 Vol 3 (5) pp 2-6 (Oct)

The AB Powermet Press which offers push-button control and power operation for metallographic sample mounting is described and illustrated. 1 illustr.

Y *C 12.61*

Spiral-point drill and Spiropoint drill sharpener

Cincinnati Lathe & Tool Co, Cincinnati, Ohio. *Machinery* (NY) 1957 Vol 64 (4) pp 204-206 (Dec)

An entirely new design of drill point called the Spiral-point has been developed, together with a Spiropoint sharpening machine for use with it. The sharpener is so designed that the drill is held stationary while the generating system gyrates around it. A small tubular grinding wheel is mounted in a rotatable carrier and the shape is generated as the grinding wheel turns around the drill axis. An adjustable truing device is provided for the grinding wheel so that the point angle of the drill may readily be varied from about 90 to 180°. 6 illustr. *Y* *C 12.21*

Tool rest for 180° positioning

Diamond Tool Co, Box 32, S Haven, Mich. *Carbide Engg* 1957 Vol 9 (11) p 37 (Nov)

An angle-set mitre gauge for use on tilt tables of carbide tool grinders is claimed to position tools at extremely small or extremely large angles during sharpening. Adjustable compressed springs hold the movable face plate in position, either towards or away from the wheel face. 1 illustr.

Y *C 12.21*

Electrochemical tool grinder has two units in one

Everite Machine Products Co, 2005 E Huntington St, Philadelphia 25, Pa. *Carbide Engg* 1957 Vol 9 (11) p 36 (Nov)

The model H-2 electrochemical machine tool for chipbreaker forming and off-hand grinding of carbide tools consists of a chipbreaker side and an off-hand side with a central 3000 W DC power source and centrifugal pump for supplying the electrolyte. The spindle motor is rated at ½ hp and turns a 7 in. diameter metal-bonded diamond wheel on the off-hand side and a 6 in. diameter wheel on the chipbreaker side. 2 illustr.

Y *C 12.21 : C 12.9*

Characteristics of surface layers of tempered steel subjected to grinding and honing

A. V. Nikok'skii. *Trudy Sem Po Kach Poverkh* 1951 (1) pp 69-79; *Library of Congress Mthly List Russ Access* 1957 Vol 10 (8) p 2181 (Nov) (In Russian)

X *C 12.6*

Directions for external circular grinding, long- and plunge-cut grinding. Richtwerte fuer das Aussen-rund- Laengs- und Einstechschleifen

H. Opitz, E. Saljé, K. E. Schwartz. *VDI Zeits* 1957 Vol 99 (36) p 1818 (Dec 21) (In German)

Book, Forschungsberichte des Wirtschafts und Verkehrsministeriums Nordrhein-Westfalen No 324. Westdtsch Verlag, Cologne and Opladen, 1956, 50 pp, illustr. Price DM 13.85. (In German).

The various problems of grinding are illustrated by numerous examples. In most cases the effect of tool and workpiece speed and feed is found to outweigh that of any other single factor.

H *C 12.6*

Abrasive cutting-off. III. Causes of tool failure. Le tronçonnage par abrasion. III. Causes de rupture des meules

R. Robin. *Machine-Outil Franç* 1957 Vol 22 (127) pp 93, 95, 97 (Dec) (In French)

(Cont). Causes for wheel breakage, such as faulty mounting, bad condition of chucks, bad running of machine or faulty fixing of workpiece are considered. (To be cont). 11 illustr. *H* *C 12.6*

Reinecker universal tool and cutter grinder type WZS-5

J. E. Reinecker, Einsingen. *Metalworking Prodn* 1957 Vol 101 (52) pp 2341, 2343 (Dec 27)

This is an automatic machine claimed to have rapid and simple setting and to permit an almost unlimited range of cutting tools to be ground to close limits and high finish. 1 illustr. *Y* *C 12.21*

Superfinishing

L. Sanderson. *Tooling* 1958 Vol 12 (1) pp 38-39, 40 (Jan)

A general review is given of the development and present techniques of superfinishing.

Y *C 13.4*

Changes in conditions of ground workpiece surface layers during the wear process

V. A. Rystsova. *Trudy LIEI* 1956 (13) pp 9-33 ; *Library of Congress Mthly List Russ Access* 1957 Vol 10 (8) p 2279 (Nov) (In Russian)

X *C 12.6*

Machines and devices for the treatment of metallic surfaces. A review of the 5th European Machine Tool Exhibition at Hanover. Maschinen und Einrichtungen fuer die Oberflaechenbehandlung von Metallen. Ein Rueckblick auf die 5. Europaeische Werkzeugmaschinen Ausstellung in Hannover

K. Schroedter. *Metalloberflaeche* 1957 Vol 11 (12) pp 380-384 (Dec) (In German)

Among various grinding and polishing machines, the Diprofil filing machine of Diamantprodukter AB, Haegersten, Stockholm, is described. 9 illustr.

H *C 12.6*

Projector adapted to grinder solves form-tool problems

J. R. Sloan (Miniature Precision Bearings Inc, Keene, NH). *Am Machinist* 1957 Vol 101 (26) pp 114-115 (Dec 16)

To simplify the grinding of tools, an optical system is incorporated in the grinder. A magnified view of the grinding operation is obtained by projecting a silhouette of the tool profile engaged with the grinding wheel onto a screen. This gives optical control for manipulating the grinder worktable to follow a 20 : 1 template. The adaptation permits precision grinding of radii with a standard radial grinding fixture and a diamond cup wheel. Details are given of focussing and mounting.

F *C 12.21*

Cemented carbide material speeds hard surfacing of metal surfaces

Kennametal Inc, Latrobe, Pa. *Am Machinist* 1957 Vol 101 (25) p 150 (Dec 2)

Kenplate consists of small hexagonal plates of tungsten carbide assembled in a continuous pattern on an adhesive glass fibre backing to provide flexible sheets or strips for application on flat or curved surfaces. They can subsequently be ground for maximum smoothness. 1 illustr.

Y *C 12.2*

The design, production and application of carbide cutting tools. Zur Gestaltung, Herstellung und Verwendung spanabhebender Hartmetallwerkzeuge

J. Witthoff. *Industrieblatt* 1957 Vol 57 (11) pp 531-538 (Nov 25) (In German)

The properties of various carbides are described and suitable designs for various types of material and applications are given. They are usually finished by grinding with silicon carbide or diamond wheels, the latter being more economical, particularly when used wet. Honing is very important to obtain high surface finish. 20 illustr, 8 ref, 1 table.

H *C 12.21*

NEW MACHINING METHODS

An improved way to cut cylindrical crystals

F. Barbieri, J. Durand. *Bell Lab Rec* 1957 Vol 35 (10) pp 428-429 (Oct)

An extension of the Airbrasive device for projecting a stream of abrasive particles in a dry inert gas carrier was devised at the Bell Lab : the crystal is shaped with the abrasive stream inside a partially evacuated hood of transparent plastic. The abrasive stream is directed through a nozzle straight at the crystal and produces a cutting action by impingement. The basic principle is that of a lathe, with the abrasive stream as the cutting tool. The example is given of a guanidinium aluminium sulphate hexahydrate crystal being cut to an 0.3 mm diameter in under 2½ hr. 3 illustr.

R *C 12.9*

Recent developments in ultrasonic machining

Kerry's (Ultrasonics) Ltd. *Brit Communications & Electronics* 1958 Vol 5 (1) p 31 (Jan)

The account is chiefly concerned with thread generation in tungsten carbide and ceramics. 3 illustr.

Y *C 12.9*

Spark plus arc hardens steel in Russia

I. I. Kichkin. *Am Machinist* 1957 Vol 101 (25) pp 97-99 (Dec 2)

Thermo-electric spark grinding of machine parts in Russia is described and a graph of variation of micro-hardness with depth is given. The current intensity in amperes for spark and arc discharges is given for a wide range of components, including blades for cutting slate and disk saws for marble, etc. 5 illustr.

Y *C 4.32 : C 8.0 : C 12.9*

POWDER TECHNOLOGY

Sieving, screening and separating

W. Barth. *VDI Zeits* 1957 Vol 99 pp 1459-1460 ; *Insdoc List* 1957 Vol 4 (23) col 1587 (Dec) (Original in German)

X *D 7.3*

Particle size determination by sieving, air-sieving, sedimentation and the Blaine test. Teilchengroessenbestimmung durch Sieben, Windsichten, Sedimentieren und den Blaine-Test

W. Batel. *VDI Zeits* 1957 Vol 99 (35) pp 1763-1764 (Dec 11) (In German)

Lecture to VDI Committee on Dust Technology, Hamburg, Apr 25-26, 1957.

The percentage of the maximum fraction passed in screening is independent of the grain size with plane screens but decreases with grain size for 'throw-on' sieves. The results of air-sieving and sedimentation analysis are in good agreement and follow smoothly on the results of screening. The results of the Blaine test are often unreliable. *H* *D 7.5*

'Miniaturized' dust collector

Joy Mfg Co, Oliver Bldg, Pittsburgh 22, Pa. *Grinding & Finishing* 1957 Vol 3 (5) p 89 (Sep)

A cylindrically shaped wet type dust collector, the Joy Microdyne, is said to be 1/20 to 1/10 the size of any comparable unit and capable of collecting over 99% of dust particles of 5 microns and larger. The collector may be installed as part of the duct and represents an unusual application of certain aspects of wet inertial type collection. 1 illustr.
R *D 7.0*

The technical difficulties in the dry preparation of superfine grains. Die verfahrenstechnischen Schwierigkeiten der trocknen Feinstkornaufbereitung

W. Gruender. *Glueckauf* 1957 Vol 93 (45/46) pp 1118-1122 (Nov 9) (In German)

The intrinsic difficulties in the separation and sorting of superfine grains (0.1-0 mm) by sieving, sifting, air streaming and magnetic and electrostatic separation are discussed. 5 illustr, 9 ref, 1 table.
H *D 7.4*

Modern developments in crushing technology for the production of fine and superfine useful dusts. Die moderne Entwicklung der Zerkleinerungstechnik zum Herstellen feiner und feinster Nutzstaeube

H. Rumpf. *VDI Zeits* 1957 Vol 99 (35) p 1762 (Dec 11) (In German)

Lecture to VDI Committee on Dust Technology, Hamburg, Apr 25-26, 1957.

For optimum crushing efficiency the energy given to each particle must be just sufficient to produce crushing, *ie* the supply of energy must be adjusted to the size and hardness of the charge. Ball mills for hard and precious materials are combined with cyclones for a particularly high degree of fineness. Suitable methods are described for reducing the stress due to the impact of flying particles. *H* *D 7.2*

Grain size determination. An accurate microscopic method for the determination of the surfaces of small particles. Korngroessenbestimmung. Die Verwendung des Mikroskops zum genauen Messen der Oberflaeche kleiner Teilchen

F. D. Pidgeon, C. Dodd. *Peintures, Pigments, Vernis* 1953 Vol 29 pp 818-822; *Techn-Wiss Ber Osram* 1957 Vol 30 (3/4) p 75 (Apr 15) (Original in French)

An improvement of Fairs' method is described, in which the projected areas of many randomly situated particles of more than 3 microns diameter are measured by comparison with circles in an eyepiece graticule.
H *D 7.5*

ICI sedimentation apparatus

Anon. *BTL Bull* 1957 Ser II (28) p 10 (Nov)

This apparatus for particle size analysis in the subsieve range is based on the Andreasen sedimentation tube. 1 illustr. *Y* *D 7.5*

The regularities in the grain size distribution of mechanically crushed materials. Die Gesetzmaessigkeiten der Korngroessenverteilung maschinell zerkleinerter Materialhaufen

E. Lazar. *Acta Techn Hungar* 1957 Vol 17 (3/4) pp 175-217; *Glueckauf* 1957 Vol 93 (35/36) p 1134 (Aug 31) (In German)
H *D 7.2 : D 7.5*

DIAMOND TOOL PRODUCTION AND DIAMOND RECOVERY

The production of diamond grinding wheels. Diamant-Schleifscheibenherstellung

Anon. *Industriekurier* 1957 Vol 10 (195) p 662 (Dec 18) (In German)

Diamond grinding wheels are produced by sintering at temperatures up to 900 deg C. Nimonic 80, an 80/20 NiCr alloy, retains its strength at elevated temperatures, does not oxidize and has a high fatigue resistance. Moulds retain their dimensions accurately despite repeated and sudden heating and cooling and remain air-tight during the whole process. 1 illustr.
H *D 8.0*

Grinding wheels Microhoned to reduce production costs . . . improve performance

Anon. *Cross-Hatch* 1957 Vol 9 (3) pp 2-3 (Sep-Oct)

By changing to Microhoning for processing the arbor holes of resinoid bonded snagging wheels, it is claimed that the necessity for manual handling is reduced, accuracy and finish is improved, and wear is decreased.
F *D 8.0*

Mechanical sectional wheels

D. V. Egorov. *Stanki i Instr* 1957 Vol 28 (6) p 35 (June); *Library of Congress Mthly List Russ Access* 1957 Vol 10 (8) p 2181 (Nov) (In Russian)
X *D 8.0*

Porous grinding wheels

Electro Refractories & Abrasives Corp, Buffalo, NY. *Carbide Engg* 1957 Vol 9 (12) p 28 (Dec)

These wheels utilize minute balloon-like particles, or brittle sponge-like rigid materials, that break away during grinding leaving 'air conditioned' voids in the wheel surface. It is claimed that this construction facilitates better control of poor uniformity.
F *D 8.0*

Reclamation of diamond

Indiana Diamond Dust Reclamation Co. *Ind Diamond Rev* 1957 Vol 17 (204) p 213 (Nov)

A note is given on the work of the company.
Y *D 7.6*

Determining diamond concentration in a diamond wheel

F. W. Lindblad. *Grinding & Finishing* 1956 Vol 2 (2) p 51 (June); *Ind Diamond Rev* 1957 Vol 17 (204) pp 215-216, 219 (Nov)

See *Bibl Ind Diamond Appl* 1956 Vol 13 p B266.
X *D 8.0*

Determining thermophysical constants for grinding wheels

S. S. Silin. *Trudy MATI* 1957 (32) pp 161-168; *Library of Congress Mthly List Russ Access* 1957 Vol 10 (8) p 2181 (Nov) (In Russian)
X *D 8.0*

SURFACE FINISH TESTING

Criterion for evaluating the smoothness of machined surfaces

M. A. Babichev. *Trudy Sem Po Kach Poverkh* 1951 (1) pp 80-87; *Library of Congress Mthly List Russ Access* 1957 Vol 10 (8) p 2279 (Nov) (In Russian)

X *C 6.0 : D 15.4*

Use of pneumatic devices for control of surface roughness

B. S. Davydov. *Vestnik Mash* 1957 Vol 37 (12) p 66 (In Russian)

X *D 15.4*

Hydrostatic methods for checking the straightness and planeness

B. D. Nikitin. *Stanki i Instr* 1957 Vol 28 (7) pp 17-19 (July); *Library of Congress Mthly List Russ Access* 1957 Vol 10 (8) p 2279 (Nov) (In Russian)

X *D 15.4*

Photoelectron equipment for checking the depth of minor grooves and cavities

P. A. Obnovlenskii, L. A. Musiakov, M. A. Shteintsaig. *Stanki i Instr* 1957 Vol 28 (7) pp 19-21 (July); *Library of Congress Mthly List Russ Access* 1957 Vol 10 (8) p 2279 (Nov) (In Russian)

X *D 15.4*

Radiographic investigation of the quality of surfaces subjected to milling and fine turning

Yu. S. Terminasov, L. V. Tuzov, A. V. Poltavskii. *Trudy LIEI* 1956 (13) pp 125-144; *Library of Congress Mthly List Russ Access* 1957 Vol 10 (8) p 2279 (Nov) (In Russian)

X *C 6.0 : D 15.4*

Determining the smoothness of surfaces by means of impressions

D. N. Ulezko, O. A. Kashaev. *Izm Tekh* 1957 (3) p 76 (May-June); *Library of Congress Mthly List Russ Access* 1957 Vol 10 (8) p 2279 (Nov) (In Russian)

X *D 15.4*

Surface testers at the 5th European Machine Tool Exhibition at Hanover. Oberflaechenmessgeraete auf der 5 Europaeischen Werkzeugmaschinen-Ausstellung in Hannover

H. von Weingraber. *VDI-Zeits* 1957 Vol 99 (34) pp 1722-1723 (Dec 1) (In German)

Various optical surface testers are described. 1 illustr.

H *D 15.4*

Testing problems of technical surfaces. Pruefen und Messen technischer Oberflaechen

A. Wiener, R. Lehmann. *Technik* 1957 Vol 12 pp 477-483 (July); *Battelle Techn Rev—Abstr* 1957 Vol 6 (11) p 771a (Nov) No 16539 (Original in German)

Deviations from the geometrical surface. Relative value system of a surface section. Roughness of the surface according to the type of work; boring, polishing, smelting, or rolling. Characteristics of the surface quality.

X *D 15.4*

MISCELLANEOUS

Characterization of sinterable oxide powders. I. BeO

J. F. Quirk, N. B. Mosley, W. H. Duckworth (Battelle Memorial Inst, Columbus, Ohio). *Am Ceram Soc Journ* 1957 Vol 40 (12) pp 416-419 (Dec)

9 illustr, 4 ref.

X *D 14.1*

PUBLICATIONS RECEIVED

BOOK REVIEWS

Research reports of the Ministry for Economic Affairs and Transport of Nordrhein-Westfalen. Determination of the stresses, strains and breaking speed of grinding wheels subjected to centrifugal and cutting force. Forschungsberichte des Wirtschafts- und Verkehrsministeriums Nordrhein-Westfalen. Feststellung der Spannungen, Dehnungen und Bruchdrehzahlen der unter Fliehkraft und Bearbeitungskraft beanspruchten Schleifkoerper

O. Kienzle, H. Muennich. Westdeutscher Verlag, Koeln & Opladen. 122 pp, illustr, bibliography, 1957. Price DM 31.35. (In German)

In the Institute for Machine Tools, a systematic investigation of the effect of centrifugal and cutting force on grinding wheels has been carried out. The wheels are examined at speeds varying between 0 and 40,000 rpm.

The stress on the wheel due to the centrifugal force is calculated and the critical factors are measured with strain gauges. The method and evaluation of results are described in detail. Stress-strain curves are plotted for wheels of varying grades of hardness. The wheels are also subjected to a bending test and it is found that the modulus of elasticity so determined is greater than that found by tensile tests. The effect of the pressure of the wheel mounting is investigated. The strain measured on the revolving wheel is in good agreement with that calculated from the elastic constants.

The peripheral breaking speed is determined on vitrified wheels, and is found to increase with decreasing ratio of internal to external wheel diameters and with increasing wheel hardness. The strain produced by the superposition of grinding forces is examined and found to be much smaller than that due to the centrifugal forces. The authors conclude that, if the wheel is designed to withstand the stresses arising from its speed of rotation with reasonable margin of safety, it will also be capable of withstanding the usual pressures exerted during grinding.

H *C 12.6 : D 8.0*

Werkstatt und Betrieb-Kalender 1958

Carl Hanser Verlag, Munich. 4th ed, 397 pp, illustr, 1958. Price DM 3.60. (In German)

The Yearbook again contains a small diary in which memorable dates of the engineering industry are marked. The main section contains classified abstracts of all articles which have appeared in *Werkstatt & Betrieb* during 1957, and a detailed subject index to them. Two brief original articles about the law concerning the inventor-employee and the method of collecting and using suggestions for improvements in industry are included. The volume contains a directory of libraries, technical colleges, societies and associations, official inspection and testing departments and manufacturers. *H B 3*

TRADE LITERATURE

Firms issuing trade literature connected with the industrial diamond and allied fields are reminded that we would welcome the receipt of such literature for review in this journal. Copies should be sent to the Industrial Diamond Information Bureau, Industrial Distributors (Sales) Ltd, 2 Charterhouse St., London E C 1.

TRADE LITERATURE

The GKN type micro-hardness tester

Associated Automation Ltd (formerly Hall Telephone Accessories Ltd), 70 Dudden Hill Lane, London, NW 10. 52 pp, 7¼ × 10 in., illustr. Price £1 1s 0d

This handbook describes in detail the construction of the hardness tester, its initial setting up, and the method of using it successfully in conjunction with a bench-type metallurgical microscope and its optical accessories. A wide list of applications is appended and precautions which should be taken in using the machine are listed. Finally, there are tables of diamond pyramid hardness numbers for use with the tester and a number of photomicrographs illustrating indentations on various materials. *Y C 4.32*

Christensen Diamond Products

Christensen Diamond Products, 1937 S Second West, Salt Lake City, Utah. 22 pp, 8½ × 11 in., illustr

Diamond bits described and illustrated are small and large stone-setting core bits with spiral, large and multiple waterways, the wireline core bit for use with the wireline core barrel, and a wide range of drilling bits including the spiral drilling bit for sticky shales, soft sands, limestones, etc, and the cloverleaf drilling bit which is designed for combating sticking problems encountered in deep and sloughing holes. The series of wireline core barrels, slim hole core barrels and many miscellaneous parts are also included in the catalogue. *Y C 9.21*

Cutglas diamond edgeworking machine

Cutrock Engg Co Ltd, Dollis Mews, Dollis Park, Finchley, London, N 3. 1 p, 7½ × 9 in., illustr

This pencil edger, fitted with Neven impregnated diamond wheels, has a detachable wheel dressing device which is said to be less harsh on the wheel than the normal type of brake dressing attachment. It is designed for use on plate and sheet glass, shelving, doors, panels, vitrolite, etc. *Y C 7.23 : C 12.8*

Endia precision dressing slide unit model PDS 29

Engineering Diamonds Ltd, 26 Warwick Row, Coventry. 4 pp, 5⅞ × 8¼ in., illustr

A new device has been added to the range of Endia grinding wheel profiling equipment; it is a high precision slide unit which can be applied to almost any type of grinding machine for the purpose of truing angular faces.

The unit is lever operated, and has a stroke of 2 inches. The flange construction of the base allows temporary clamping to angle plates, or to any suitable block, for use on toolroom or small batch work; or the unit can be screwed and dowelled to a wedge-shaped base or to any convenient support for quantity production work. Both edges of the base are machined parallel to the slide axis, and can be used for sine bar setting of angles.

Three diamond stations are provided, each in angular relation to the slide axis, so that occasional rotation of the tool will generate fresh cutting edges on the diamond, thus permitting the best grinding finish to be obtained. *Y C 5.0*

Plate type honing tool for high production

Barnes Drill Co, 814-830 Chestnut St, Rockford, Ill. 4 pp, 8½ × 5½ in., illustr

The difference between this new type and the slotted body type of tool is that the former is designed with sintered carbide inserts forming the long sides of the stone slots, thus giving these sides greater wear characteristics than the normal hardened steel bodies. The slotted body type tools require a new body when the slots become excessively worn, but with the plate type tool, body surfaces and the ends of the carbide plates may be reground. *Y C 13.3*

X-ray diffraction cameras

Hilger & Watts Ltd, 98 St Pancras Way, London NW 1. 4 pp, 10 × 8 in., illustr

X-ray diffraction cameras illustrated and described include the Nonius general-purpose and quadruple Guinier cameras, the Enraf-Nonius Rimsky Retigraph, the Nonius Weissenberg goniometer and the Hilger powder, general-purpose and single-crystal cameras. *Y D 15.2*

Profilometer equipment

Micrometrical Mfg Co, 345 South Main St, Ann Arbor, Michigan. Catalogue No 157, 14 pp, 11 × 8½ in., illustr

This catalogue provides the most recent specifications for the complete line of Profilometer equipment for measuring surface roughness in the shop. Special Profilometer equipment is also described and illustrated and reference is given to further instruction manuals, etc, which may be obtained from the Company. *Y D 15.4*

RMB miniature bearings

Miniature Bearings Ltd, 39 Parliament St, Westminster, London SW 1. 61 pp, 6 × 9 in., illustr

The latest RMB catalogue of miniature ball and roller bearings, dated November 1957, supplements previous editions without rendering them obsolete. The principal changes in the new catalogue are specified in an accompanying note, in view of the fact that many copies of the 1954 edition are still in use for reference purposes in drawing offices and technical libraries. Following a general introduction, the catalogue goes on to deal with load capacity, friction and torque, inspection and tolerances, mounting and mounting fits, cleaning, lubrication, and characteristics of angular contact ball bearings. Subsequently, specifications are given for a wide variety of bearings. *Y C 3.21*

Collected catalogues : Unicam instruments
Unicam Instruments Ltd, Arbury Works, Cambridge. 11 × 8½ in., illustr

The Company offers a full range of precision instruments for crystallographers. Two instruments at present in use for basic research into the structure of materials under a variety of conditions are the S35 Weissenberg goniometer for providing accurate information on crystal cell size and the indices of reflecting planes, and the S70 high temperature powder camera which can be used for x-ray analysis up to 1,000° C.
Y *D 15.2*

Technical manual [surface plates]
Collins Microflat Co Inc, 3249 West El Segundo Blvd, Hawthorne, Los Angeles, Calif. 57 pp, 8½ × 11 in., illustr

After describing general features of commercial granite, its composition and texture, the manufacture of Microflat granite surface plates is described in considerable detail and with a great number of illustrations. Slabs sawn from selected blocks of black granite are inspected for character, grain structure, colour and hardness and are diamond sawn into surface plate blanks. A ledge cutting operation is then performed, the clamping ledges being made with the same diamond saw. This is followed by rough grinding, rough lapping and finish lapping processes, the last including what is claimed to be a revolutionary improvement which eliminates risk of seizure of gauge blocks and checking fixtures. A continuous bearing surface interspersed with micronic valleys, which afford sufficient air pocket relief to prevent seizing, is now provided. Accuracies in final lapping are 0.0001 and 0.00005 in. *Y* *C 8.0*

Vulcascot anti-vibration pads
Vulcascot (Great Britain) Ltd, 87/89 Abbey Road, London NW 8. 7 pp, 10 × 8 in., illustr

The need for eliminating vibration and noise in machinery is too well-known to require any amplification, and a number of forms of anti-vibration devices have been developed for this purpose. Vulcascot anti-vibration pads are moulded in a special synthetic rubber compound and are fully oil resistant. It is claimed that the pads retain their full resilience under heavy loads over a period of many years. Their normal thickness is 5/16 in. and it is stressed that they should not be compressed to less than ¼ in. when fully loaded. For extremely heavy machines two or three layers of the pads can be used. *Y* *C 6.0 : C 12.6*

Carbide die sharpening procedure—a guide that points the way to faster, better, and easier grinding
Oberg Manufacturing Co, Tarentum (Pittsburgh Dist), Pa. 8 pp, 8½ × 11 in., illustr

The use of silicon carbide wheels is strongly disapproved since they present too many hazards of possible damage to the die. Resin-bonded diamond grinding wheels of specific grade, size and hardness, and with a bakelite core, have been found to be most efficient. Recommendations are given for roughing, fine finishing and all-purpose work. Advice is given on checking the run-out of the diamond wheel and it is strongly stressed that once the wheel is running true, it should never be removed from its adapter until worn out. Useful and detailed instructions are given on dressing the diamond wheels, inspection prior to grinding, and the usual methods of sharpening the die.
Y *C 12.2*

Precisioneering and productioneering Oberg carbide dies
Oberg Manufacturing Co, Tarentum (Pittsburgh Dist), Pa. 48 pp, 8½ × 11 in., illustr

This catalogue offers a very comprehensive and well-illustrated range of carbide dies and includes advice on the general care of dies and on the selection of the correct diamond wheel for sharpening.
Y *C 12.2*

The Osmond high-speed tile and glass cutting machines
Impregnated Diamond Products Ltd, Tuffley Crescent, Gloucester. 4 pp, 6 × 9 in., illustr

These machines are specially designed for the swift cutting of glazed tiles, similar ceramic materials, and all types of glass. They can be provided with a 12 × 3/32 in. abrasive wheel or with a diamond disk.
Y *C 7.0 : C 8.0*

Service and equipment catalog : Microhoning, complete engineering service
Micromatic Hone Corp, 8100 Schoolcraft Ave, Detroit 38, Mich. 31 pp, 8½ × 11 in., illustr

In this catalogue the Microhoning process is described and a wide range of Microhoning machines for cylindrical, raceway and spherical work is illustrated and discussed. Further details are given on coolants and abrasives, and on automatic and flat Microhoning.
Y *C 13.3*

Rotary table Pilotor
Micrometrical Manufacturing Co, 345 S Main Street, Ann Arbor, Mich. 1 p, 8½ × 11 in., illustr

The Profilometer type PE rotary table Pilotor provides the circular tracing motion and easy loading needed for measuring the roughness and concentric diameter on flat surfaces. During the operation the tracer remains stationary, while the table rotates, carrying the part being measured. A height adjustment knob permits the tracer to be raised or lowered for measuring a wide range of parts. Typical applications include refrigerator seals and valve seats.
Y *D 15.4*

Hyprez oscillating tool finishing machine
Hyprez Division, Engis Equipment Co, Chicago 5, Ill. 4 pp, 8½ × 11 in., illustr

Instead of oscillating the edge of the tool across the face of a stationary lapping wheel, this finisher moves the lapping wheel across the edge of the stationary tool ; thus the tool remains in a fixed position on the work table, accurately set and precisely controlled by the mitre gauge tool holder. Each table has its own protractor. Angles in the vertical plane can therefore be adjusted by tilting the worktable by ±30°. When used with Hyprez diamond compounds, an increased tool life and increased production per tool grind is claimed. *Y* *C 12.21*

Neven diamond tools
Impregnated Diamond Products Ltd, Tuffley Crescent, Gloucester. 28 pp, 7 × 9 in., illustr

The Neven catalogue includes a graph showing the effect of coolant on tool performance, the rate of grinding in g/min being plotted against the time of grinding in minutes for various fluids. The tests illustrated were carried out on glass, but the figures are said to bear a very similar relation on other materials. Advice is given on coolants and also on mounting, speeds, cleaning, pressure and machine specifications. The very wide range of Neven tools is detailed and illustrated. *Y* *C 1.6 : C 12.2*

PATENT LISTS

BRITISH

Official Journal (Patents) 1958 (3594) (Jan 2)

791,368 ATLAS COPCO AKTIEBOLAGET. Rock drill steel grinders.

Official Journal (Patents) 1958 (3595) (Jan 8)

791,403 HILL PORTER (NEWCASTLE) LTD, and A. C. TALBOTT. Rotary drill bits, or drill heads, for making holes in coal, rock and other strata required in mines and other places.

Official Journal (Patents) 1958 (3596) (Jan 15)

791,729 HELLEFORS BRUKS AKTIEBOLAG. Rock drills.

UNITED STATES

Official Gazette 1957 Vol 725 (1-5) (Dec)

2,814,916 E. M. ADAMS, PRECISIONS-CORMET CO INC. Machine for grinding facets in lenses.

2,814,918 J. R. ERICKSON, NORTON CO. Cut-off wheel.

2,815,017 V. BORDONARO. Grinding wheel dresser.

2,815,435 J. L. ADCOCK, FIRTH STERLING INC. Spark machining apparatus.

2,815,610 H. S. SIEMSEN, K. E. FOOTE. Twist drill point grinder.

2,815,619 T. L. BROWNLEY, E. L. DU PONT DE NEMOURS & CO. Grinding machine.

2,815,744 R. L. CRANE, CONTINENTAL MACHINES INC. Surface grinder equipped with motorized crush roller.

2,815,746 H. SCHWARZKOPF, J. G. VAN OTTERLO, CONSOLIDATED DIAMOND TOOL CORP. Cut-off blades for abrasive bodies and their production.

2,815,932 N. E. WOLFRAM. Retractable rock drill bit apparatus.

2,816,056 F. S. HARRIS, CLERITE CORP. Phonograph pickup.

2,816,401 R. A. DUFF, F. H. LLOYD & CO LTD, JAMES BRIDGE STEEL WORKS. Grinding machines.

2,816,438 J. B. PRATHER. Apparatus for testing hardness of inside surfaces.

2,816,479 C. H. SLOAN, E. I. DU PONT DE NEMOURS & CO. Particle measurement.

2,816,735 J. Z. DALINDA, R. SPIRO, R. DALINDA. Method and apparatus for drilling with dissociated gas.

2,816,824 H. WILANSKY, CORNING GLASS WORKS. Cerium oxide polishing composition.

2,817,194 M. J. LEIMAN. Diamond polishing adjusting device and dop.

2,817,330 A. K. SELNES. Dresser for grinding or lapping tool.

2,817,932 A. RASKE. Abrading wheel.

2,818,231 W. A. FREEMAN jun, V. G. MADORS, ESSO RESEARCH & ENGINEERING CO. Method of drilling with air.

2,818,233 E. B. WILLIAMS jun. Drill bit.

2,818,490 R. J. DIXON, W. H. BATEMAN, FIRTH STERLING INC. Means for use in the working of metals by electro-erosion.

2,818,491 V. E. MATULAITIS, ELOX CORP. Electrode wear compensation.

SOUTH AFRICAN

Official Journal 1957 Vol 10 (48-52) (Nov-Dec)

Complete Specifications Accepted

1660 W. P. MCKAIN, STARDRILL KEYSTONE CO. Dressing tool machines.

2362 E. W. HALL, F. L. & J. C. GODMAN CO. Rotary abrading tool.

2455 F. T. STANCHUS, UNION CARBIDE CORP. Electric arc working.

Extracts of Complete Specifications

2137/57 E. H. CARMAN, BIRMINGHAM SMALL ARMS CO LTD. Spark machining.

3303/55 J. G. GLASSFORD, HARD METALS LTD. Apparatus for grinding.

1660/56 W. P. MCKAIN, STARDRILL-KEYSTONE CO. Dressing tool machines.

2362/57 E. W. HALL. F. L. & J. C. GODMAN CO. Rotary abrading tool.

AUSTRALIAN

Official Journal 1957 Vol 27 (42-46) (Nov-Dec)

211,027 SYNTRON CO. Lapping method and apparatus.

211,323 DE VLIEG MICROBORE CO. Tool holder and adapter.

SWISS

Patentliste 1957 (21-23) (Nov-Dec)

325,539 M. BRUMA, CENTRE NATIONAL DE LA RECHERCHE SCIENTIFIQUE. Device for machining electrically conductive workpieces by means of intermittent electrical discharges.

325,540 M. BRUMA, M. MAGAT, CENTRE NATIONAL DE LA RECHERCHE SCIENTIFIQUE. Device for spark machining.

325,567 W. THIEMIG, W. FORSTER, E. HAASIS, ZAHNRADFABRIK FRIEDRICHSHAFEN AG. Device for longitudinal spherical grinding of spur wheels.

325,568 GES DER LUDW VON ROLL'SCHEN EISENWERKE AG. Device for grinding longitudinally curved workpiece surfaces.

325,769 F. SCHEUCHZER, A. SCHEUCHZER, LES FILS D'AUGUSTE SCHEUCHZER SA. Equipment for grinding the carrying surface of railway rails.

325,918 R. BAJULAZ. Method of superfinishing a mechanical workpiece by burnishing and tool for carrying out this method.

326,005 G. E. BJOERKLUND, AB DENTATUS. Dentists' drill with hard metal cutting bit.

326,212 R. E. FUCHS, PETER FUCHS ERSTE NAXOSSCHMIRGELFABRIK DEUTSCHLANDS. Hardness tester for ceramic and other artificially bonded articles.

326,266 GES DER LUDW VON ROLL'SCHEN EISENWERKE AG. Grinding device incorporating a grinding wheel and means for truing it.

326,352 G. E. BJOERKLUND, S. R. EDVARDSSON, AB DENTATUS. Drill for dentistry.

FRENCH

Bulletin Officiel 1957 Vol 74 (3842-43); 1958 Vol 75 (3844-45) (Dec-Jan)

1,154,997 H. OPITZ. Device for controlling the feed of the electrodes in spark machining metals.

1,155,689 G. M. NAVARRO. Method and machine for sawing marble or similar materials.

1,156,170 C. KRUG. Device for measuring and controlling surface grinding machines.

1,156,197 KUGELFISCHER GEORG SCHAFER & CO. Method and device for non-destructive determination of hardness.

GERMAN

Patentblatt 1957 Vol 77 (51-52); 1958 Vol 78 (1-3) (Dec-Jan)

Applications Open to Public Inspection

1,021,305 N. AXELSSON, SANDVIKENS JERNVERKS AB. Boring head for rock drills with hard-metal cutting bit.

1,021,399 H. RECKER. Method for heat treatment of steel drill crowns of double and multiple carbide steels.

1,021,584 R. MANTZ, TELEFUNKEN GmbH. Method and device for needle sound recording.

1,021,747 K. MAY. Rotary grinding and polishing tool.

1,022,111 H. S. HALLEWELL. Pantograph grinding wheel truing device.

1,022,113 E. FUCHS, WAGNER & ENGLERT GmbH. Grinding wheel and method for its manufacture.

1,022,441 K. HERTEL. Hard metal cutting bit. (Add 947,659).

1,022,766 H. PEHLEMANN. Method and device for rounding or faceting the edges of thin sheets of glass.

THE FOLLOWING REPRINTS ARE NOW OUT OF STOCK AND UNAVAILABLE

I 36—Optical methods for the examination of surfaces, by B. Frischmuth (*IDR*, 1946).
I 38—Diamond abrasive sawing disks, by W. Stern (*IDR*, 1946).
I 52—Third symposium on diamonds, with contributions by E. H. Kraus, W. B. Emerson, etc. (*Am Mineralogist/IDR*, 1946).
I 58—Investigations of the lapping process, by F. Eugene (*IDR*, 1947).
C 3—Diamond tools for plastics (*Plastics*, 1944).
C 5—Machining of light alloys with diamond tools (*Light Metals*, 1944).
C 7—Cutting tool nomenclature, by P. Grodzinski (*Machinery*, 1944).
C 8—Machining of copper, by P. Grodzinski (*Metal Industry*, 1944).
C 12—Machining brass, by W. Stern (*Metal Industry*, 1945).
C 16—Selection of industrial diamonds, by P. Grodzinski (*Mining Journal*, 1946).
C 25—The industrial diamond, by W. Stern (*S. African Engineering*, 1947).
C 38—Die technischen Fortschritte bei Diamantwerkzeugen in den letzten 5 Jahren (Technical developments with diamond tools during the last five years), by P. Grodzinski (*Feinwerktechnik*, 1950. In German).
C 86—A gear drive for a simple polariscope, by P. Grodzinski (*Lab Practice*, 1955).
D 13—Trade Names Index (*IDR*, 1945).
D 14—Glossary of technical terms, by W. J. Sansom (*IDR*, 1945).

This list includes those out-of-stock reprints already mentioned on p 8 of our current Reprint List.

THE BUREAU'S LOAN SERVICE

Recently the Industrial Diamond Information Bureau has been compelled to return a number of applications for copies of articles abstracted in the Bibliography owing to insufficient details being given of the item required. The attention of all users of the Loan Service is drawn to the note appearing in each issue asking inquirers to supply adequate information.

We have also received several requests from the USA for copies of articles originally appearing in that country, which we were unable to fulfil since our Loan Service operates only in Great Britain. We advised the firms concerned to approach the magazines direct, a procedure which resulted in some loss of time.

It would be convenient not only for the bureau but for inquirers if these two points could be borne in mind.

GENERAL NOTES

The Industrial Diamond Information Bureau is included in the Diamond Research Organization of Industrial Distributors (Sales) Ltd (incorporated in the Union of South Africa), together with the Diamond Research Laboratory in Johannesburg.

Abstracts

The Bureau prepares abstracts of current scientific and technical literature, including patents, on industrial diamonds and associated subjects. These are published monthly in *Industrial Diamond Abstracts*, which is supplied free to those concerned with the use of diamonds for industrial purposes, and to specialist libraries. The publishers do not claim any copyright in respect of abstracts in this journal. No specific acknowledgement is made to other abstract journals, and no objection will be made to other abstract journals using the contents.

The list of journals (latest issue, September 1955) from which *Industrial Diamond Abstracts* is compiled will be supplied on request.

Library

The Bureau has a Reference Library which seeks to cover world literature on the application and production of diamond tools. It is kept up to date by a careful examination of new publications announced in abstract and technical journals and covers, in addition to English, German, French and Russian books. The library specializes in technical and scientific pamphlets.

The book-stock up to December 1954 is listed in ' List of Books and Pamphlets in Special Library of Industrial Diamond Information Bureau ' (concluded September 1952 ; reprinted July 1955), and the ' Supplement to List of Books and Pamphlets ' (concluded December 1954).

Patent Abstracts

Patent lists are prepared from official patent journals of the major industrial countries, and patent abstracts in general from the printed patent specifications. Printed copies of British patent specifications accepted may be obtained from the Patent Office, Southampton Buildings, London WC 2, at 3s each. Numbers given under British applications for patents are for reference in all correspondence up to acceptance of the complete specification.

The following abbreviations are used :—BP for British Patent, USP for United States Patent, DAS for German Patent Application, DBP for German Patent (GP for German Patents issued prior to 1950), FP for French Patent, Canad P for Canadian Patent, RP for Russian Patent.

Supply of Literature †

1. **Loan Service :** much of the literature abstracted in this journal is available in its original form, and can be borrowed for a period of fourteen days (in Great Britain only). Text books dealing with diamond may similarly be borrowed, and surveys of literature on special uses of diamond will be prepared on request.

2. **Reprints :** copies of certain selected articles on industrial applications of diamond are available and can be supplied on request at a charge of 1s each, post free. New reprints are announced from time to time in the Bibliography, and a classified list of reprints, dated April 1955, is available free on request.

Technical Information

The Bureau offers the resources of its considerable literature holdings to those seeking specific information on diamond tool and similar applications. Problems requiring fuller technical assistance can be referred to the Diamond Research Laboratory, Johannesburg.

† **Inquiries in connexion with these services should be made to Industrial Diamond Information Bureau, Industrial Distributors (Sales) Ltd, 2 Charterhouse Street, London EC 1.**